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THE ECONOMIC RECORD

MAY, 1954

GORDON L. WOOD: AN APPRECIATION

Gordon Leslie Wood, Sidney Myer Professor of Commerce in the University of Melbourne, died on 29th June 1953, at the age of 62. He was the fourth senior academic economist to pass away in Australia within the short space of three years. These four men —Brigden, Giblin, Mills and Wood—were distinguished teachers of economics. Each in his own way has left an enduring impression upon the universities of this country. Each of them will long remain the focus of remembrance and affection for many hundreds of University graduates throughout Australia.

But these four academic stalwarts—each so different from the others in qualities of mind and temperament—brought their gifts to the service of a much wider community. In a very real sense they were men of action who played parts of importance in the developing life of Australia over several turbulent decades. Tributes to J. B. Brigden, L. F. Giblin and R. C. Mills have already appeared in this journal. This brief article offers appreciation of G. L. Wood.

Gordon Wood was born in Launceston on August 29, 1890. Graduating from the University of Tasmania in 1912, he taught for the Tasmanian Education Department up till 1919, then as a master at St. Peter's College, Adelaide. When Professor (now Sir Douglas) Copland came from Hobart to the University of Melbourne in 1925 to establish the School of Commerce, Gordon Wood was his first choice as a senior lecturer to assist in the pioneering work. No better choice could have been made. With his enthusiasm, sound judgment and vigorous personality, Wood powerfully supplemented the drive and great capabilities which Professor Copland brought to the building up of the new School. Gordon Wood served continuously on the staff of the University for 28 years. In 1930 he had conferred upon him the Melbourne Doctor of Letters degree. In 1931 he was made Associate-Professor in Commerce and became Acting-Professor at the outbreak of the war when Professor Copland was called to Canberra as Prices Commissioner. When in 1944 the Faculty was reorganized in separate Departments of Economics and Commerce, he was appointed to the Sidney Myer Chair of Commerce.

Right from its start the School of Commerce was characterized by its channels of two-way communication with the community outside the University. The outcome over the years was twofold.

Governmental and business leaders increasingly consulted the staff of the School on harassing problems of the day. In association with Professor Copland, Gordon Wood gave much service in this outward flow of guidance and consultation. On the other hand these channels tapped knowledge and experience from the outer world which gave a quality of realism and maturity to the teaching within the School. This inflow of knowledge and experience did not undermine those foundations of theory which must be preserved in strength in all University teaching. Rather it fortified them. It certainly saved the School from becoming an ivory tower. In a unique way Gordon Wood was able to constitute himself a bridge between academic teaching and the world of practice. Genuinely a teacher by inclination as well as training, he never ceased to garner, for the benefit of his students, whatever significant facts and ideas his own close ties with the world of affairs could be made to yield.

Over the 28 years of his academic life his reservoir of energies was called upon for service in a multitude of directions—demands which would have proved too exhausting for most people. Many a time he did reach the point of near-exhaustion, yet his buoyant spirit hid this fact from all but his close associates. At the University he had a full load of teaching and administrative duties, the latter involving attendances at many committees. On top of these there was outside an endless succession of other meetings and functions to attend or addresses to give—most of them avoidable, no doubt, had he preferred the quiet life. Despite these demands upon his energies and his willing response to them, he found time and detachment enough to write books and a wide range of articles, reports and data papers for conferences. It was inevitable that in his later years the gathering administrative and wider community responsibilities should leave him less time for teaching.

For several years he was Dean of the Faculty. He played a leading part in the work of such University bodies as the Special Matriculation Committee, the Visual Aids Committee, the Appointments Board, the Board of Studies in Journalism, the Council of the University Women's College. He took a prominent part in the early stages of the development of the Canberra University College. He was, from its foundation, an active member of the Social Science Research Committee (now Council) of Australia, and was primarily responsible for pioneering and keeping afloat the publication of the Australian Social Science Abstracts. On the back cover page of every one of the 56 half-yearly issues of the *Economic Record* from November 1925 to May 1953, the name of G. L. Wood has appeared as the Hon. Secretary of the Economic Society of Australia and New Zealand—still another index of his continuous labours and

devoted service to the building up of the study of economics in this part of the world.

For 17 years Gordon Wood was a member of the Commonwealth Grants Commission—a period of membership more than double that of any other member. His work on the Commission merits special emphasis. It was his major activity outside the University. The experience it gave him contributed richly to his intimate understanding of Australia's economic and financial problems, and that benefit he passed on to others. He was first appointed on July 15, 1936, at the end of the three-year term of the first Commission. By this time the major principles upon which the Commission was to work subsequently had been established. In the first of the Reports in which he participated, the Fourth, appeared for the first time a chapter on the economic position of the claimant States. In the Fifth Report this survey was extended to cover the economic position of Australia and each of the six States. This chapter, which has appeared as a substantial part of all the later Reports, was the distinctive contribution of Gordon Wood to what is probably the most valued annual document we possess for interpreting the relative changes in the economic and financial position of the States. The Reports of the Commission bear the very definite imprint of his easy literary style.

Another distinctive feature of his part in the team work of the Commission was his skill in examining witnesses. The witnesses he handled were mainly those dealing with agriculture, war-service land settlement, forestry, roads, education and the social services generally. His questioning was never pedestrian and he had the knack of putting witnesses at their ease with his flashes of wit which were never barbed. "One feature of his examination of witnesses throughout the eight years during which I was associated with him on the Commission," writes the Chairman, Mr. A. A. Fitzgerald, "was that the line of questioning he used was always unpredictable. We had decided among ourselves that the enquiry should follow certain lines. Gordon would handle the questions arranged on these lines and would then proceed to question on entirely different lines. In many cases it was evident that he was taking opportunity to gather information which he could use in his work at the University, but there was always the underlying feeling that he was doing educative work as well as investigation work. On one occasion, after he had finished examining the Director of Education in Western Australia and the witness was about to depart, I overheard him say to Gordon with a smile: 'I see you are still a teacher as well as an examiner'."

As was said in an earlier paragraph, Gordon Wood's output of writing and editing was substantial. Moreover, his voice was often heard over the air as a commentator on international affairs.

A listing of published addresses, lectures, articles, reports and data papers from his pen would be lengthy and show the very wide range of matters which engaged his mind. His numerous articles, notes and reviews in this journal alone (he contributed to the very first issue) illustrate this wide coverage, spreading in the earlier and middle years over such topics as tariffs and international trade, immigration, land settlement and utilization, transport, reparations and war debts, and, in the later years, monetary and fiscal questions, post-war economic planning, and the problems of federal finance. Even this recital does not exhaust the variety of his written contributions, as found in other learned journals, the press, reports to governments and symposium publications, and in his editing work. Of the three books in his own name—*The Tasmanian Environment* (two editions), *The Pacific Basin* (three editions) and *Borrowing and Business in Australia*—his study of the Pacific area (made realistic by travel facilities given by the Institute of Pacific Relations) was undoubtedly the best. His study of the borrowing cycle in Australia, published on the eve of the depression of the thirties, has not won the high standing in Australian economic literature which its labours might have been expected to gain for it. This is perhaps due to the hesitancy felt by critics in accepting its historical and statistical techniques. Nevertheless, many of the observations in this book concerning the effects of pre-depression overseas borrowing upon living standards, capacity for internal saving, economic organization and productivity in Australia, reveal the supple quality of a mature and analytical mind.

In 1939 appeared the first edition of *Land Utilization in Australia*, the joint product, after labours extending from 1932, of Professors S. M. Wadham and G. L. Wood. This has become a standard text of international repute. In it were conjoined Wadham's unrivalled knowledge of the technical possibilities of land use and Wood's expertise in the borderland between economics and geography. Gordon Wood's qualities made him an ideal partner. Professor Wadham writes: "His guiding hand can be discerned in almost every page of the book, while those chapters and sections which deal with the broad world trends and their influence in Australian development, were the product of his thought and effort." This but illustrates how well he nourished his mind from the twin sources of geography and economics, avoiding the pedantry of both disciplines and making each the servant of the other.

Mention has already been made of his contributions, from the very beginnings of the School of Commerce, to the development of the two-way communication with the world of government and business outside the University. The kind of impact he himself made

upon the Melbourne business world, is told eloquently by one of its leading representatives[1] who writes: "I suppose we all of us take on, more or less, the special colour of our environment and tend to herd with our kind, but Gordon Wood seemed able to escape this. There is little doubt that, until his assumption of important responsibility in the University, businessmen in general had often felt a certain lack of ease with University men, especially perhaps with Faculty members. To them, the University professor lived and moved and had his being in an ivory tower, and all too often the professors were unable to do much to dissipate this impression. They usually bore, too, the academic mint-mark in both appearance and speech, which didn't help to bridge the gap. But Gordon Wood had the gift of climbing over those hurdles with his humour, his humanity and his flair for talking the language of the street and the market-place as well as of the rostrum. I think that if you were to ask any random group of businessmen who knew him well what were the outstanding impressions left upon them by their contacts with him, they would say that through his simple understanding, human approach, backed by his genial, kindly and informal personality, he brought the University, and of course especially the Commerce Faculty, into closer relationship and understanding with the business world. . . . Many men in the business world, through their friendship with him, were eventually infected with his faith in the value of the University Commerce training to the business world; and, although many of them were for a long while sceptical, Gordon's faith and advocacy induced them to give graduates a trial in their own businesses where they otherwise would never have considered doing so."

To make a just and adequate appraisal of the lifework of a man of such varied gifts is not easy, especially when it is essayed in a few paragraphs by one who was a colleague and friend. Here was a man who brought to important tasks the gifts of imagination, fertile ideas, initiative and leadership through team work. In committee work he had the enviable capacity for resolving impasses with the satisfactory formula. Often, it is true, his fertile brain made him a little too quick in his judgments. At times his co-workers would feel that his desire for conclusiveness led him too readily to bypass important, if delaying, factors in the matters under consideration. But he did not nurse resentment when the bubble of his imagination was pricked—he was not conceited enough for that to happen. He was a lively conversationalist, in matters both light and serious. His good humour and friendliness and his love of a wisecrack made all the difference at any gathering he attended. As

1. Mr. A. H. Tolley, Joint Managing Director of the Myer Emporium.

one of his colleagues[2] has said: "He was a master of the *mot juste*, as witty as he was apt, and a brilliant occasional and after-dinner speaker". In his writing and speaking he was as skilled in as he was as fond of using apposite analogies.

He had, indeed, a rare combination of gifts. What was more important, these in turn became gifts he bestowed upon his community. He was not an "intellectual" as that much-abused term is narrowly understood in some quarters and he would have been the first, with a witty turn, to disclaim the doubtful honour of being so described. He was well aware of his own limitations.

Let this, then, be the tribute to Gordon Wood: with his gifts he served his day and generation faithfully and well. Ten thousand words could say no more.

F. R. E. MAULDON

University of Western Australia.

2. Professor Wilfred Prest.

THE PROBLEM OF FEDERAL FINANCE[1]

What, you may ask, is there to say on federal finance that is new, interesting, and sensible? It is a fair question; I asked it myself when the Section secretary gave me my instructions: to prepare a presidential address which would constitute a general introduction to a projected series of specialized papers on particular aspects of federal finance. Those specialized papers have, in the event, disappeared from the programme and I am left with a paper which has the characteristics of an introduction to a *non sequitur;* the secretary has discreetly disappeared abroad.

I have, however, let my paper stand, though I would emphasize that it was designed as an introduction, not least because it was the easiest solution, but also because even if what I have to say is not remarkable for sense, deficient in interest, and by no means novel, there is something to be said for the subject. When a problem is always with us, it can scarcely be said to be exhausted.

Nevertheless, the theme of what I have to put to you is the suggestion that the reason why, after all the dust and noise, there is no solution to the problem of federal finance, is that the problem is not one of finance, nor even, except because of the historical institutional context, one of federalism. Our difficulty in dealing with the group of problems which, for purely historical reasons, we continue to label federal finance, lies, I suggest, precisely in that; a misleading label conditions our thinking so that we look for financial solutions, and presume that they must take a federal mould. There is certainly not likely to be much further advance in technical discussion within the strictly financial field of debate. The main issues have been analysed, the chief lines of possible change in financial relationships have been scrutinized, and over half a century most of them have been tried out. I do not propose to enter the lists with a new solution; within the accepted framework of debate there is nothing new to propose. My comments are rather directed towards expressing scepticism about the importance of the issues in that debate; doubts, as I said, whether the problems of Australian federalism are financial or are problems of federalism.

All the issues come to sharp focus in uniform income taxation and a convenient way to break into the subject is to start with it. Uniform taxation has already gone through several clearly marked stages. From its introduction until the end of the war the system of compensation to the States originally adopted worked well enough,

1. Presidential address to Section G of A.N.Z.A.A.S., Canberra, January 1954.

that is, the average of their two preceding years' tax collections being paid to the States with a right to any State to apply for increased amounts, the Grants Commission being the referee. The reason it worked was that the States were rolling in money, partly because the decline in unemployment and the shortages of manpower and materials imposed low spending. The second stage was the immediate post-war period in which the States made it clear that they would have no truck with the Grants Commission, not so much because of the inappropriateness of the Commission's technique of relating the position of the claimant to that of the non-claimant States, as because no State could be expected to tolerate a Commission of three, appointed by the Commonwealth, passing judgment on its policies. In some small measure, that does, of course, happen with the claimant States, but the general standard of reference is the level of the better-off States, and the claimants have no occasion to quarrel with that. But uniform taxation grants are a very different matter. No such inter-State comparisons are available, and the amounts are a substantial part of State revenues.

The removal of war brakes on expenditure necessarily meant within a short time that all States would want to spend more, and any review of their claims must mean passing judgment on their policies in a much more directly political way than is involved in the ordinary work of the Grants Commission. It was only to be expected, therefore, that the end of the war should see a period of inter-governmental wrangling and wangling through and outside the Premiers' Conference and the Loan Council, and the striking of impermanent and clumsy compromises. Thus we have had a series of compromise formulae serving no other purpose than to give the States some more while limiting Commonwealth commitments.

We now seem to be entering the latest stage, involving increasing use of the grant-in-aid and further transfer of functions to the Commonwealth. Unwelcome as these are to the States, they seem to be the only likely avenues for a solution—and they might, therefore, as well be consciously thought out in advance. The States are naturally reluctant to surrender functions; the Commonwealth is equally unwilling not to claim the power of the purse, so that the adoption of the grant-in-aid seems inevitable. But there are also other fields in which the Commonwealth can be relied upon to proceed with its own policy directly, not through the machinery of the States, and thus effectively to take over State functions. The enlargement of the Federal Parliament and the rewards of the Commonwealth service are both hastening the transition to a condition in which the States have no future except as administrative agents of a central government. For a while the old hands among both State

politicians and State officers will in general prefer to remain with the States, but increasingly the able young men will regard State politics as a proving ground preparatory for the more open fields of Canberra, and State service as at best an apprenticeship for wider horizons and the greater power of the Commonwealth.

The trend was only underlined by the interlude of the Commonwealth proposal to return taxing powers to the States. Whether that was seriously meant, or was a momentary outburst of irritation at States which used Federal monopoly of income tax as the never-failing political smoke-screen, or was intended to call their crude bluff, was never quite clear. Perhaps it was all three. What is clear is that it *was* merely a light interlude which did not interfere with the main performance. The point was made effectively, without attracting much notice, by two small examples of the tax-return policy in practice. Those States which reached out a tentative avaricious hand for the land tax which the Commonwealth cast aside did not go far, and at least one recoiled with singed fingers; when entertainment tax was dropped in their laps several of them ostentatiously looked the other way. Yet these two taxes have pre-eminently the characteristics of "local" taxes, where divergences in rates and other conditions between States are, within broad limits, not matters of concern. Any State Treasurer who had really believed his own yarns about financial independence for the States would have moved smartly into these fields and demanded more of the same policy of re-allocation of sources of revenue on the only sort of basis that is workable in the twentieth century.

There is, you will rightly say, nothing new in all this, either in the facts, or in what I am saying about them. It is merely the latest phase of a trend which has been continuous since Federation, and it is still the same because it is by and through financial relations that Federalism is disappearing. But it is extremely difficult to get it admitted that Federalism was a stage in Australian political development which must now be regarded as over, and that in most, but not quite all, functions of government we have effective unification within a nominal federalism.

That, as I see it, is central to the whole discussion. In current debate the terms of the problem have been dictated by those who oppose the trends of the last half-century, the diehard federalists who want to put the clock back. All the arguments about Commonwealth encroachment on State functions and tax fields, the claims for financial independence for the States, and the like, pre-suppose that the objective to be sought is something like the distribution of political powers of 1901. To deplore the departures from what the Founding Fathers designed is perfectly legitimate; to see dangers

of centralization and over-government in trends away from the weak government which characterizes federalism may be completely justified. But it is not sensible to believe that it is practical politics to secure in this country a reversion towards federalism and less of the near-unitary state we have reached. The clock will not go backwards. And if that is conceded, it calls in question at once any continued discussion of financial problems within the traditional framework of Commonwealth-State relationships. What becomes relevant is the design of financial machinery and financial policy without undue regard to the "rights" of the "States".

The basic weakness in the diehard Federalist position is the refusal to recognize that, except momentarily half a century ago, Australians are not Federalists. It is doubtful if, in any community, more than a tiny proportion of people are ever Federalists on principle, believing that it is the best system of government. It is a platitude that it is a compromise system, for combining unity of action in some fields with diversity of interests in others. But that was a very short phase for Australia, and Federalism would probably never have stood a chance but for the accident that the Australian colonies attained self-government at a time when they were effectively separated by wide, scarcely-settled, areas. It was the fifty years between self-government and federation which dictated that the first stage of the process of unification should start in what was almost an academic text-book application of the federal structure. In 1850 the colonies were physically separate; in 1900 they had had half a century of conscious political separatism to prevent anything closer than federation—what is remarkable is that the unifying forces even then were strong enough to produce a constitution which, especially in its financial clauses, foreshadowed the pre-eminence of the Commonwealth.

One argument for federalism—distance and difficulty of communication—has ceased to have much relevance. Of the two main conflicts of interest between the separate colonies which had a geographical basis, one, the tariff, was settled in 1908. The other, closely related one, the disproportionate importance in some States of primary industry, has been resolved by the Country Party lamb lying down with the Liberal Party lion and fattening on a varied fare of subsidies, bounties, home consumption prices, stabilization schemes, tax exemptions and the like.

What uniform income tax has done has been to make patent and immediate the fact that the States depend henceforth for their security, and even their existence, not on the legal prescriptions of a written constitution, but on the shifting currents of politics. It is not because Australians are federalists that they so frequently have

said "no" on referenda, nor that on issues where there are sharp cleavages it has so often happened in recent years that judicial action has denied power to the Commonwealth. The processes of legal resistance to expanding Federal power become increasingly easy to exploit, when the incentive to exploit them is strong, the further actual Commonwealth activity extends. But only the naive would claim that the main body of those who have inveighed against recent Commonwealth attempts to exercise new powers were inspired by the desire to preserve federalism; they were opposed to the exercise of such powers by any authority, and the remnants of federalism provided the effective legal method of resistance. The verdicts in the two bank cases will appear, in twenty years' time, not as great victories in the limitation of a voracious federal octopus, but as key decisions in the final rejection of federalism.

The existence of new-State movements is evidence not so much of active "federal" thinking as of reaction against centralization. The centralization against which new-States profess to campaign is not, at least mainly, that of the Commonwealth; it is far more conspicuous in every State. In fact, what has made possible a high degree of centralization within State administrations is the existence of a nominal federalism. It is a paradox that the number of our States is far too few to make federalism work, but that in terms of population and the size of its governmental problems, even the largest of them is too small to be compelled to decentralize its administration. The conspicuous examples of decentralized administration are Commonwealth ones—the large Federal department has its State offices; the post office being necessarily localized becomes the instrument of other departments' administration, as in pensions. It is not that the Commonwealth is consciously following a political principle, merely that when the problem is big enough decentralization is the effective way of getting the job done.

Apart from the immense inertia created by a formal written constitution, the forces that are actively concerned with restoring or maintaining the powers of the States are largely a matter of political organizations. State political parties exist by and for State politics and can be expected to take a lively interest in self-preservation, just as State public servants will be concerned about their careers. Even "federal" political parties are organized on a federal structure and cannot ride roughshod over the institutional vested interests of their component bodies. "State rights" is, in the middle of the twentieth century, often merely a high phrase for such institutional and occupational interests which, in themselves, are of no great moment. It is the measure of the decline of Australian federalism that this is so; the States are no longer vital political entities in any basic sense,

but merely institutional structures whose justification depends on the function they fulfill.

The financial realities of Australian Federation are now represented not by the written clauses of the constitution but by uniform income tax, the Loan Council, the Grants Commission, and the miscellany of Commonwealth grants to States, and by the far-reaching monetary powers, even short of bank nationalization, which the Federal Government possesses. One can respond to dissatisfaction with this by clinging to the tatters of federation and seeking a new financial deal. That is what the diehards want, and at least they have achieved a victory in that, as I have suggested, even their opponents allow them to dictate the agenda for debate, to impose their view that restoration of effective State financial independence is the acknowledged objective. A reversion to a modified system of per capita payments, and ingenious devices for combining a single collection process with a dual income tax have been discussed; no one I suppose any longer takes seriously the Commonwealth returning to the States effective power to raise their own taxes. Those things have all been tried before, and experience has shown that they are solutions at best for a very few years. They would work no better in the future for the same basic reasons.

Those who cling to federalism in fact want weak government with few and limited powers. That is a coherent position but one somewhat out of fashion. The trend is obviously to strong centralized and extensive government, with public insistence on uniformity of policy throughout Australia. What I want to suggest is that it would be more sensible to accept the inevitable, even if one dislikes it, and think out the financial and other relations of the Commonwealth and States, on the basis that the Commonwealth is the primary policy-making body and the States primarily administrative agencies, instead of tinkering, with the intention of making a moribund federal system work, with financial arrangements which really register the collapse of that federal system. In short, as I have suggested, the problem of financial relations between Commonwealth and States is no longer, at least mainly, one of finance. It is that of designing our administration to fit a *de facto* unification achieved by financial trends—not, I hasten to add, that I would support anything so futile as a grand convention to rewrite the constitution on these lines.

The difficulty with such a convention is that it could only function effectively if there were basic agreement on the type of government to be enshrined in a rewritten constitution. In the nineties the job of the final convention was to determine on what precise terms there should be federation. To-day the accepted issue of the debate imposed by the diehards is whether there should be "real"

federalism, or the status quo with its implication of increasing Commonwealth authority. Election of delegates to a convention on any acceptable basis would mean a collection of delegates who would represent the divisions which constitute the problem. If it ever arrived at any substantial area of agreement, it would be on the basis of the status quo with improvement in details. And I am not sure that recasting, by such a convention, of troublesome clauses in the constitution, such as section 92, would lead to happy results. Section 92 as it stands, we may remind ourselves, owes its delusive simplicity to the determination of the political leaders to say what they meant in plain straightforward language and to prevent the lawyers introducing complications; the banking clause owes its final form to a motion in the N.S.W. Parliament by W. M. Hughes, who demonstrated clearly enough that he had not the foggiest idea what it was about. Within the financial field, a convention which ultimately accepted the kind of so-called federalism at which we have arrived would be hard put to it to devise revolutionary changes in the financial arrangements which have grown out of the relatively simple, sweeping clauses of the Constitution. It might give exclusive rights to some "local" taxes to the States—but they don't all want land or entertainments tax. It could hardly be so unrealistic as to propose denying the Commonwealth at least equal powers in all important taxes which have not a local basis. Uniform income tax has come to stay, despite the constitutional right of any State to re-enter the income tax field. Something might be done with regional (i.e. State) sales tax, but it is most improbable that the States would show any greater enthusiasm for this than for land tax. That the convention should place any limits on Commonwealth grants to States is unthinkable. In short, it is difficult to imagine, in the present circumstances, any very drastic rewriting of the formal financial clauses of the Constitution emerging from a convention. And if the constitutional clauses remained substantially unchanged, there is no reason to believe that the institutions, policies and procedures which have been built upon them would be vitally affected by a set debate about the state of federalism in Australia.

What all this means for my main subject is, in one respect, comforting. If one accepts as inevitable—whether unwelcome or not is immaterial—something like the present sort of political relationships between Commonwealth and States, then broadly the financial relationships which have grown up are reasonably appropriate ones. In short, as soon as one rejects the demand for restoration of financical independence to the States, "the problem of federal finance" largely evaporates.

But it is not really as comforting as all that, because it is not

so simple. The disappearance of the problem of federal finance, as I have just stated it, comes dangerously close to the tautology that if you decide, on any of various grounds, to reject the objective of restoring State financial independence, then you do not have to worry about the methods by which that independence might be re-established. It does not mean that the kind of governmental system into which our federalism has evolved does not create problems of financial relations.

Consideration of those, I suggest, must start from acceptance of Commonwealth pre-eminence in the raising of revenue, and specifically of income tax. The evidence should by now be clear enough that no strong interest group really wants a reversion to separate income taxes, unless perhaps those who naively believe that it would mean lower taxes. That would be an impossible outcome unless Commonwealth defence and social service spending were seriously reduced. State governments are clearly not over-anxious, despite their posturings, to face the responsibility of politically earning their livings. Apart from the minor attractions to taxpayers of relative simplicity in returns and assessments, one income tax does mean the uniformity throughout Australia of rates, and that has attractions not only to business interests but also emotional appeal to our somewhat simple-minded ideas of fair play and equal treatment. Moreover, it has come to be accepted in modern thinking that taxation should be varied not merely to raise spending money, but to deprive taxpayers of spending power; that is, that taxation should be consciously employed as an instrument of economic policy. That is impossible to any significant degree for a State, whereas it is, at least theoretically, fully within the competence of the Commonwealth—although recent experience with a wool levy, or with efforts to incorporate income tax in a general anti-inflationary policy, should be warnings that effective use of taxation as an instrumen of general economic policy still requires more governmental skill in the devising of policies and more political sophistication on the part of the taxpayer.

But the point is a valid one. Given the demand of the electorate for active governmental direction of the economy—whether enshrined in slogans of full employment, control of inflation, or whatever appears to be the problem of the moment—possession of over-riding taxing power is as essential to the Commonwealth as is central banking or trade policy.

Nevertheless, most of the discussion of federal finance concentrates on the revenue side, as if surrender of Commonwealth power over the main taxes were a realistic issue. But the introduction of uniform income tax has transferred the emphasis to the expenditure side. Primarily that is expressed in the demands of State govern-

ments for more money—more money, that is, without responsibility for raising it by taxation. But behind that very natural demand are the real problems, problems created, as I see it, by persistence with the forms of federal government in the face of permanently unified finance.

It is in the annual Premiers' Conference wrangle that there is the nearest approach to any assessment of priorities between State and Commonwealth activities. It is only to the extent that specific forms of expenditure become incidental subjects of discussion that even that rough and ready evaluation of State against Commonwealth needs descends to the level that ought to be our real concern.

The total funds becoming available to a State are now determined by a rather remarkable process, in which the effective discretion rests with the Commonwealth, and even that is not in practice very free. A State has, of course, its receipts from various remaining taxes and from miscellaneous sources. On the whole the revenue under State control is not very flexible, or, where it may be so, as in some particular taxes, the total amount involved is not large enough for variations in rates to affect in any great degree total revenue. Against State receipts are commitments the large items of which are not open to any drastic reduction. The theoretically flexible items in State finances which are important are loan raisings and receipts from the Commonwealth as tax reimbursement.

Politically tax reimbursement payments are not very flexible. Serious reduction on the last year's figures is not conceivable. Really large increase is nearly as improbable. On the lowest level, the Commonwealth is bound to resist large increases because subsequent large reductions are sure to be difficult if not impossible. Equally, increases will be resisted because the Commonwealth has to raise the money, and in so doing to face the political consequences—which would include, for example, inability to win electoral favour by tax reductions.

On a higher level, the Commonwealth, being responsible for the main variable taxes, is primarily responsible for varying them in the light of economic conditions, just as it has to accept the main task of setting a limit to loan raisings. The gross total of Commonwealth and State spending is just as much a matter of broad economic policy to be formulated in the light of current economic conditions. At best, therefore, the Commonwealth must look at the total of its own and State spending in these broad terms and endeavour to control them as part of its overall responsibility for monetary and financial responsibility. Commonwealth policy makers would be less than human if they did not prefer to squeeze State spending rather than their own, quite apart from the more earthy pressures in the same

direction to which I have referred. The tendency may be modified in some degree by such political pressure as the States can muster, as well as by the activities of groups and organizations with special interests in particular forms of State expenditure.

Whether out of this process there emerges what, in the economic situation of the moment, are the desirable total of taxation and loan raisings, and the desirable total of spending by Commonwealth and State governments combined is a moot point. At least it is hardly the machinery for determining these levels which an economic planner presented with a clean slate would design; some of us, who are a little afraid of giving government planners real power to follow their forecasts boldly, may take comfort from the persistence of some inefficiency and untidiness in the process. But even we would have to recognize here a particular expression of one of the most potent of the forces which have undermined federalism and a major barrier to any restoration of independent flexibility in State finances. Governments and their advisers faithfully reflect the temper of the times, and the pursuit of policies designed to influence general economic conditions marches ill with the weakness and diffusion of power of federalism.

The other side of the medal is the unsatisfactory provision for assessing particular forms of State expenditure against particular forms of Commonwealth spending. For instance, it seems likely that the process of allocation of financial resources between States and Commonwealth has in the post-war years favoured government spending on consumption as against investment, taking particularly the form of enlargement of those Commonwealth social services which involve money payments or free (or subsidized) services. Two expensive State activities which have clearly suffered are transport and education. More generally it is obvious that functions the cost of which has risen steeply are at a serious disadvantage if they remain State functions and that extensions of State functions and improvements in their efficiency are at a serious disadvantage in competing for funds. Moreover, this is a situation which can be expected to deteriorate over time.

This view does not involve taking at face value the protestations of the States, which of course have nothing to lose either in clamouring for more or in belabouring the Commonwealth. Within the financial limits they have, they are fully responsible for the distribution of their resources, in which they have on occasions evidently chosen their economies with an eye to blackmailing the Commonwealth. I may, perhaps, also be permitted the professional comment that nothing in the alleged niggardliness of the Commonwealth can excuse the miserable scale on which the States finance their Universities.

As between Commonwealth and State activities these broad questions of priority enter only incidentally into the annual squabble over funds. They are used by State governments in a loose sort of way to beat the Commonwealth and especially in self-justification for their own deficiencies; while the Commonwealth in rebuttal is apt to make rhetorical reference to defence and social services. Federal authorities will not be anxious to push detailed comparisons too far, for they might prove embarrassing. The States themselves hesitate to submit reasoned cases for particular forms of expenditure, for that would be the final surrender. It would mean unambiguously transfer to the Commonwealth, with its power of financial veto, of policy-making in such fields, leaving the States in a position comparable with that of any Commonwealth department preparing estimates, even if the consideration of the proposals demanded more formal proceedings.

Yet that, in substance, seems to be the only line of advance open. If we are to have an assessment of the claims of, say, education against medical services or of the capital development needed to restore public transport against the plans of National Development, the holder of the purse-strings must be forced to face responsibility for the issues and to make the decisions explicitly. This does not mean a plea for summary abolition of the States; that would be as unrealistic as the pleas for giving them back financial sovereignty. The argument is rather that, in 1954, the practical problem of federal finance is to devise procedures for determining how far the Commonwealth should contribute to State spending, not in total, but on specific activities. (At least for a long time to come I would imagine this would mean specific arrangements in connection with a number of functions, side by side with a substantial general purpose grant.) The tidy short-cut to the end result would, of course, be outright unification, but even if it were not, practically, a remote objective, it is hardly likely to be the efficient solution and is not very attractive. Historically, gradual transfer of high-level policy to the centre from local and regional bodies, which have stubbornly clung to limited independence in matters of lesser importance, seems to have been the path both to efficient government and to political freedom. We have had held up to us the bogey of centralized government from Canberra, bogged down in an effort to govern Australia from West Block. It *is* a risk of any transfer of policy-making to the Commonwealth; Canberra is as prone to the disease as Sydney or Melbourne, but no more. But directing our planning to making the States primarily administrative agents is the best available safeguard. Much second-level policy-making will remain with the States; they will have some independent taxing powers for a long time to come; and they can be

relied upon to surrender no more power than is the price of a more rational distribution of funds.

There is considerable scope for diversity of devices and experimentation with ways in which the Commonwealth may participate in the finance of specific State activities. We have already some examples of joint enterprises and a number of grants-in-aid. The arrangements we have already vary a great deal, and there is no reason why they should in future follow a standard pattern.

What is being contemplated here is little more than a continuation of past trends, which will undoubtedly continue. Either the States will, under financial pressure, take the initiative in seeking Commonwealth aid for specific purposes, or those who are denied by State poverty will press the Commonwealth directly sufficiently for it to move. One potent force will be the one which all through has favoured Commonwealth dominance—the Australian preference for Australia-wide uniformity of treatment.

In 1900 Australians wanted common provision for defence and trade policy and little else on a uniform basis. To-day they want much else on an Australian standard, not a diversity of State policies. Few of us are much concerned in principle with the allocation of a function between States and Commonwealth. We may make a judgment about relative competence and efficiency; financial realities are compelling us to look to the Commonwealth for new expenditures and for major advances in old ones; and we tend to favour it because it does produce uniformity of treatment. Those of us who perversely see virtue in diversity and untidiness are a small minority.

All this finally comes down then to just a little more than accepting the trends of the last fifty years, to the view that our ingenuity should be directed towards easing the transition, instead of resisting it or pretending that our problem is to reverse the trend by trying to re-establish effective federalism. In short, all I have to contribute is the modest suggestion that, federalism having broken down financially, the practical problem is to avoid an otherwise inevitable centralization by moving a little faster, more consciously and deliberately, along the established trends, as the only promising way of retaining, not federalism, but a healthy degree of decentralized government.

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ON KEYNES' ECONOMIC SYSTEM — PART ONE*

Lord Keynes' fascinating and important book "The General Theory of Employment, Interest and Money" (1936) probably stands no longer in the forefront of theoretical discussion. Instead, its central lines of thought have percolated to the text-book level, where they are usually clarified by the help of a few simple models. For pedagogical purposes a new model of this kind will be introduced here. It has been simplified as much as possible to facilitate graphic representation.[1]

The system refers to a closed economy and contains the following (macro-economic) variables:

Y: income (net)
I: investment (net)
S: saving (net)
W: wage rate (per unit)
M: volume of money
M_1: cash balances held for transaction purposes ("transaction balances")
M_2: cash balances held for speculation purposes ("speculation balances")
N: employment

} all these variables are expressed in a constant value of money.

P: average level of prices
R: average level of interest rates

For the determination of these 10 variables the following ten equations can be formed:

$$R = R(M_2) \quad (1)$$
$$I = I(R) \quad (2)$$
$$S = I \quad (3)$$
$$Y = Y(S) \quad (4)$$
$$N = N(Y) \quad (5)$$
$$W = W(N) \quad (6)$$
$$M_1 = M_1(Y) \quad (7)$$
$$M_2 = M - M_1 \quad (8)$$
$$PM = \overline{M}^* \text{ (given parameter)} \quad (9)$$
$$PW = \overline{W}^* \text{ (given parameter)} \quad (10)$$

1. In this discussion ideas have been used from Palander, "Keynes' allmänna teori och dess tillämpning inom ränte-, multiplikator- och pristeorien" ("Keynes' general theory and its application in the theory of interest, multiplier and price"), *Ekonomisk Tidskrift* 1942, p. 233, and Ira O. Scott, "An exposition of the Keynesian System", *Review of Economic Studies*, XIX : 1, 1950-51, p. 14. The author also wishes to take the opportunity of thanking Dr. Bent Hansen and Dr. Ragnar Bentzel for their examination of the paper and their valuable observations.

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The system of equations differs from the usual variants inasmuch as the values of all variables and consequently also the volumes of money are expressed in a constant value of money; the relation between the magnitudes expressed in a current value of money and those mentioned here are denoted by an index number for the general level of prices (P). This procedure has the advantage that equations stating the relations between the level of interest rates and speculation balances (1), investment and rate of interest (2), income and saving (4), employment and income (5), can be written in a simple way without losing their validity when the value of money changes. Keynes has preferred to measure income and connected variables in wage-units, i.e. in the average wage for the unit of labour in which total employment is measured. It seems, however, doubtful whether this more complicated method of deflation gives better results.[2] Moreover, Keynes and his disciples do not measure the physical volume of money in wage units in spite of the fact that his famous liquidity function—which is the inverse of the interest function (1) mentoned above—has a more general significance when possible changes in the purchasing power of money are taken into account. On the other hand it seems reasonable that equation (7), giving the relation between transaction balances and national income, is valid, regardless of the unit in which these magnitudes are measured. However, in order to preserve the simplicity of the system, the transaction balances have been measured in a constant value of money in this equation also.

A digression of a more formal kind is that income (4) is regarded here as a function of saving, Y(S), while Keynes considers consumption as a function of income and determines income as a sum of consumption and investment. But as investment is assumed to be equal to saving (all magnitudes being ex-post), this is, essentially, equivalent to making income a function of saving.[3] The latter type of relation has been chosen to facilitate the graphic treatment.

Furthermore, it may be observed that in the form of the functions, transaction balances (7) are for the sake of simplicity assumed to be proportional to national income: $M_1(Y) = kY$. The function N(Y) in equation (5) is assumed to be determined by the existing technique of production; the inverse function Y(N) indicates how the total volume of production increases with employment. The function W(N) in equation (6) is best considered as the first deriva-

2. Cf. Alvin H. Hansen, *A Guide to Keynes*, New York, 1953, p. 44: "Keynes' analysis could have proceeded quite as well had he adopted the price index as his deflator instead of his wage unit. . . . Fundamentally the matter is of no great consequence. On balance Keynes' readers would probably have preferred constant-value dollars to constant-wage-unit dollars."

3. If consumption is denoted by C, we can write

$$C = C(Y); \; I = S$$
$$Y = C + I = C(Y) + S$$
$$Y = Y(S)$$

tive of the last-mentioned function, $W(N) = \frac{dY(N)}{dN}$; i.e. it gives the marginal productivity of labour and, consequently, the highest real wages employers are willing to pay. No function for the supply of labour has been included in the system. Instead, a given parameter $\overline{W}^*$ has been introduced which gives the lowest *nominal wage* workers are willing to accept (10). The total volume of labour supplied can also be considered as a given magnitude: the parameter N^*. By this construction it follows that the concept unemployment can be determined as the excess supply of labour existing at the current level of wages $(N^* - N)$.

As the number of equations equals the number of unknowns, it should be possible to determine the latter, provided that the given functions are of a form and the given parameters have values which make a solution possible. [4]

As to the latter point it should be noticed that the volume of money $(\overline{M}^*)$ and money wages $(\overline{W}^*)$ are parameters, the values of which have not been adjusted to each other. It may seem strange to base a theoretical system on such assumptions, but it is readily shown that they are of fundamental importance for Keynes' general construction of under-employment equilibria. Since unemployment is conditioned by a certain disproportion between the fraction $\overline{M}^*/\overline{W}^*$ and the functions of the system, the value of the above-mentioned fraction at the functions given is too small.[5] If the volume

4. It can be shown that the system of equations quoted here agrees with Keynes' line of thought, even though it shows some formal divergences from his own system, by some quotations from the well-known chapter (18) in which he gives a summary of his theory. Keynes distinguishes between "given factors", the changes in which can be disregarded in this connection, "independent variables" and "dependent variables" and defines them in the following manner:

"We take as given the existing skill and quantity of available labour, the existing quality and quantity of available equipment, the existing technique, the degree of competition, the tastes and habits of the consumer, the disutility of different intensities of labour and of the activities of supervision and organisation, as well as the social structure including the forces, other than our variables set forth below, which determine the distribution of the national income." (P. 245.)

"Thus we can sometimes regard our ultimate independent variables as consisting of (1) the three fundamental psychological factors, the psychological propensity to consume, the psychological attitude to liquidity and the psychological expectation of future yield from capital assets, (2) the wage-unit as determined by the bargains reached between employers and employed, and (3) the quantity of money as determined by the action of the central bank; so that, if we take as given the factors specified above, these variables determine the national income (or dividend) and the quantity of employment." (Pp. 246-7.)

(Professor Pigou writes about the lost quotation in his excellent little book *Keynes' General Theory, A Retrospect*, London, 1950: "This summary statement contains, as I think, Keynes' main and very important contribution to economic analysis".)

The three psychological factors correspond to the functions in our equations (4), (1) and (2). Wages and volume of money are regarded as magnitudes determined by circumstances outside the system and can, therefore, be introduced as parameters (10 and 9) as has been done here. Our productivity functions (5 and 6) enter among Keynes' "given factors" and that is also the case with our parameter N^*, the supply of labour. Keynes conceives the curve of supply of labour as elastic up to a certain point and it is the supply at this point that has been taken as our parameter.

5. Keynes sometimes hints that the functions in the system can be conceived as formed in such a way that unemployment cannot be avoided however much the relation $\overline{M}^*/\overline{W}^*$ is increased. If the liquidity function is infinitely elastic so that an increase of the volume of money does not bring about any lowering of the interest level, or if the investment function is infinitely inelastic so that a lowering of the interest rate does not bring about increased investment, an increase of the volume of money in relation to the money wage will not have any effect on income and employment. These particular cases have been disregarded in this connection but will be touched upon later.

of money is increased in relation to the money wage while the functions are unchanged, we arrive at positions of equilibrium characterized by increasing employment. At a certain relation between the two parameters, the result is full employment and a further increase leads to a position of "over-full" employment. If physical controls of different kinds are introduced (repressed inflation), the latter positions could also be described as equilibria. This reasoning can be illustrated graphically in a simple way (Fig. 1).

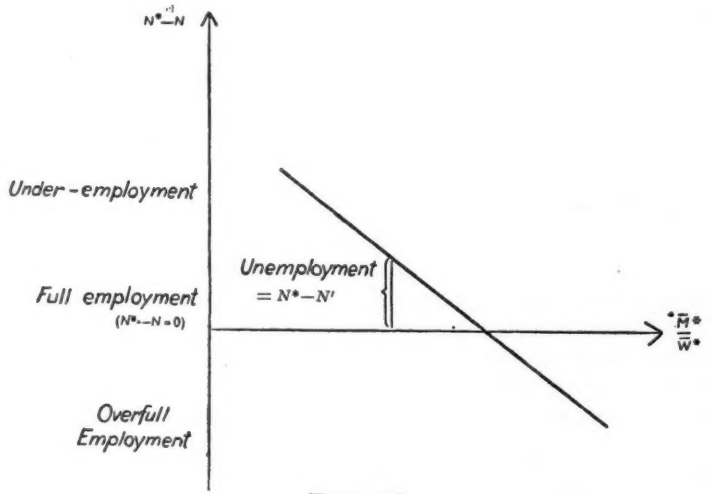

FIGURE 1

As already mentioned, Keynes is mainly interested in cases which result in unemployment, and it is therefore assumed in the following that the relation between $\overline{M}^*$ and $\overline{W}^*$ is of the type shown in figure 1.[6]

Turning to a more complete graphical illustration of our simplified variant of the Keynesian system, it is convenient to use two figures. In figure 2 the two given magnitudes, the volume of money ($\overline{M}^*$) and money wages ($\overline{W}^*$)—the relation between them has been assumed to correspond to the unemployment shown in figure 3—have been introduced as two hyperbolas with a common axis for the price level. The higher the level of prices, the lower obviously are the volume of money and wages measured in real units (M and W respectively). As the decrease in real wages makes possible a

6. Starting from the equations laid down previously and certain assumptions about the functions in these equations, it is possible to give a more exact mathematical determination of unemployment as a function of the relation between $\overline{M}^*$ and $\overline{W}^*$. But even if the form is not of the simple linear type that has been assumed in the figure, the common-sense reasoning in the text can be upheld.

greater production and, consequently, a greater total income, the higher level of prices will, at the same time as the real volume of money decreases, cause the demand for money in real units to increase, both for transaction balances (corresponding to the greater real income) and speculation balances (to make possible the lower interest level necessary for the increased investment associated with greater real income). The price level arrives at an equilibrium position when the variables M and W reach values (denoted M′ and W′) which are assumed for equilibrium between the variables shown in figure 3.

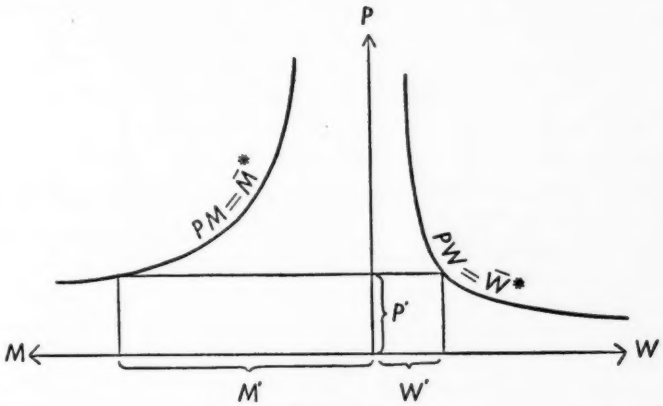

FIGURE 2

It should be observed that in figure 3 all values are measured in real units. It is convenient to start from a point where the level of interest (R) is determined by a given magnitude of the non-active holdings of money (M_2). The level of interest in its turn determines the value of investment (I) and at the same time saving (S) which, according to the definitions, equals investment. Income is also determined since it is tied to saving by the relation Y. A certain value of income implies, however, on one hand a given magnitude of transaction balances (M_1) and on the other a given employment (N). Employment being determined, we also know the highest real wage which employers are willing to pay. If the money wage demanded by the workers, the parameter $\overline{W}^*$, corresponds to the highest real wage employers are willing to pay, W′, an equilibrium has been established. It is assumed therefore that the price level according to the mechanism clarified by figure 2 reaches a level (P′) where this condition is fulfilled, i.e. $\overline{W}^*/P' = W'$. If $\overline{W}^*$ should correspond to a higher real wage than W′, this means, as is seen from the figure, that the real volume of money (M) is greater than M′ which is equal

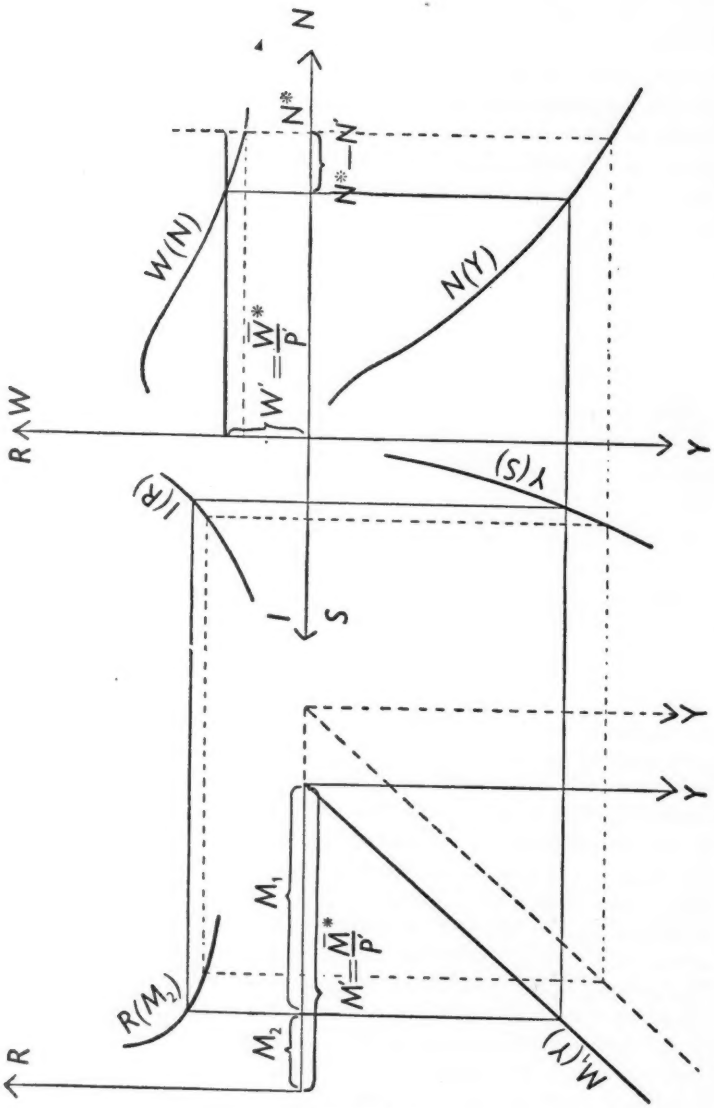

FIGURE 3

to the sum of M_1 and M_2. This is not an equilibrium position. An equilibrium is attained only when the price level has risen to the level P′ and real wages and real volume of money have decreased correspondingly.

If real wages are lower than W′, it is necessary that the price level be lowered in order to attain equilibrium. The equilibrium constructed in this way is characterized by an amount of unemployment (N*—N′) corresponding to the disproportion between the parameters $\overline{M}^*$ and $\overline{W}^*$ which was discussed with figure 1.

In constructing an equilibrium *with full employment* it is necessary to assume a different relation between the volume of money and money wages than above; the volume of money must be greater *in relation to* the money wage. In figure 3 the dotted lines show that full employment equilibrium can be reached with *unchanged functions* and at the *same level of prices,* if we assume both a greater volume of money and a lower level of wages.[7] The greater volume of money is necessary partly because speculation balances must be increased in order to make possible a lower rate of interest and, hence, a greater investment, and partly because larger transaction balances are required for the exchange of the increased national income. On the other hand, the lower level of wages is conditioned by the fact that the marginal productivity of labour decreases with increasing employment. From a traditional point of view this result does not seem very sensational. It is true that Keynes would lay heavy stress on the fact that the causation goes from increased volume of money via a lowering of the rate of interest and increased investment towards greater employment and a lower real wage, and not in the opposite direction which would perhaps be more in keeping with traditional theory. But as we are discussing an equilibrium with simultaneous interdependence of the various magnitudes, the distinction seems rather artificial.

If we drop the assumption about an unchanged level of prices and instead assume that the volume of money is unchanged, a full employment equilibrium presupposes a correspondingly greater lowering of the money wages and a somewhat smaller lowering of the price level. If we assume alternatively that money wages are kept constant, full employment requires that the price level must be raised (which implies a lowering of real wages) and that the volume of money must be increased to an extent corresponding to the increase both of transaction balances (because of the increase of national income through increased volume of production and higher prices) and of speculation balances (because of the lower rate of interest).

7. On this assumption the hyperbolas which correspond to $\overline{M}^*$ and $\overline{W}^*$ are shifted from the positions shown in figure 2, the hyperbola $\overline{M}^*$ upwards and the hyperbola $\overline{W}^*$ downwards.

In this connection we might also discuss the case in which the relation between $\overline{M}^*$ and $\overline{W}^*$ corresponds to a position with over-employment (see figure 1), i.e. that the money wage demanded by the workers is lower than the equilibrium level at full employment. The result may either be that the employers, through their competition for labour, raise wages to an equilibrium level or that wages remain on the lower level, the competition between employers being limited through voluntary agreement or by government intervention. In the latter case the distribution of incomes is less favourable to the workers than at full employment equilibrium.

The essential features in Keynes' theory are most clearly shown if we investigate the consequences for income and employment of a change in the given functions. Assume, for example, that the investment curve I(R) is higher than in figure 3 but that other functions and parameters are unchanged. The result is a new equilibrium which differs from the original in the respect that, measured in real units, investment has become greater and income has increased not only by the same amount as investment but also by an additional amount, so that the corresponding increase in saving is equal to the increase of investment; and that employment has been increased to an extent corresponding to the increase of income. A higher propensity to invest is consequently advantageous from the point of view of employment. But that is also the case with a high average propensity to consume. For if a relatively small part of the income is saved, a larger income and consequently also a higher level of employment are required in order to ensure the equality between total saving and the given investment. It also follows that the effect on income of a certain increase in investment—which can be measured by Keynes' investment multiplier—is greater if the marginal propensity to consume is relatively high, i.e. the propensity to save relatively low.[8] If we start from a position of unemployment, it is possible to say that a certain increase of the propensity to invest in relation to the propensity to save—the other parameters and functions being unchanged—leads to a new equilibrium, with income and employment at such a level that unemployment has vanished. The main point in Keynes' theory is probably exactly this that the fundamental cause of unemployment of such a kind as could be observed

8. The relation between the investment multiplier, $\Delta Y/\Delta I$, and the marginal propensity to consume, $\Delta C/\Delta Y$, can be written in the following way, since investment is taken to be equal to saving and saving equal to income less consumption:

$$\frac{\Delta Y}{\Delta I} = \frac{\Delta Y}{\Delta S} = \frac{\Delta Y}{\Delta Y - \Delta C} = \frac{1}{1 - \frac{\Delta C}{\Delta Y}}$$

If, for instance, the propensity to consume equals 0.9, the multiplier will be 10. As the propensity to consume approaches the value 1, the value of the multiplier approaches infinity.

in England and other countries in the 1930's is that the propensity to invest had become too small in relation to the propensity to save.[9]

Before we proceed to a closer analysis of Keynes' construction we must solve two methodological problems. The first relates to the extent to which the positions treated by Keynes can be characterized as equilibria.

The concept of equilibrium is easiest to apply to stationary conditions when the development during one period is repeated without changes during the following periods. This repetition is explained by the fact that the initial stage during each period is such as to cause a certain final stage, i.e. one which leads to the same initial stage for the next period as during the first period. Despite the fact that causation runs in one direction only, it is therefore appropriate to act, when determining equilibrium conditions, as if a mutual connection existed between the initial and final stages during each period. This justifies the systems of simultaneous equations (without dated variables) which are used in the constructions of such (reiterated) processes.

It also seems reasonable to postulate an interdependence between the variables entering an economic system in the case concerning the determination of the conditions for *correctly anticipated* processes. These conditions are that the individuals have such expectations of the future that they act in ways which are necessary for their expectations to be fulfilled. It follows that the interdependence between present and future magnitudes is conditioned in this case by the fact that the latter, via correct anticipations, influence the former. If we also choose to describe such developments as equilibrium processes, this implies that we widen the concept of equilibrium to include also economic systems describing changes over time where the changes which take place from period to period do not cause any interruption in, but, on the contrary, are an expression of, the continuing adjustment of the variables to each other. The similarity to the former case lies in the fact that here also a system of simultaneous equations can be used. In this case, however, they include all dated values of variables within the time horizon considered.[10]

9. It has been pointed out previously that the unemployment generated by Keynes' system (in its general formulation) is conditioned by a disproportion between the given parameters ($\overline{M}^*/\overline{W}^*$) and the given functions. It can, of course, be discussed whether the blame for the lack of adjustment and, therefore, for unemployment should be put on the parameters or on the functions. Keynes himself seems to be most inclined to answer the question in the latter direction; the fault is with the functions of investment and saving. But it is also possible to maintain that the fault is with the parameters—the volume of money and money wages. Even when the functions mentioned have a form unfavourable to full employment, unemployment can be avoided if monetary and wage policy are sufficiently adjusted to them.

10. Cf. my book *Studies in the Theory of Money and Capital*, Part 3, The Place of Capital in the Theory of Price. Cf. also Erik Lundberg "Om begreppet ekonomisk jämvikt", ("On the Concept of Economic Equilibrium"), *Ekon. Tidskr.* 1930, p. 133. For an introduction to the modern discussion, which, however, does not seem to have essentially carried forward the problem, see, among others, Samuelson *Foundations of Economic Analysis* (1947), p. 311.

In the construction of these equilibrium processes it is not necessary to presume perfect foresight in the sense that all economic subjects anticipate the actual development with full certainty. It is sufficient to presume that the economic subjects which have a determining influence in their respective markets have anticipated the actual development as the *most probable* of various possibilities, in which case both their planning and their actions to a certain extent are influenced by the presence of uncertainty (the risk factor). Further, we need not presume that the anticipations should be correct for a long time ahead. But the earlier course of development must have been such as to have generated fairly correct anticipations for the relevant period. The development must, consequently, be so stable that, disregarding exogeneous factors, it does not cause any great surprise in the near future.[11]

Keynes' theory certainly does not refer to stationary equilibria but, on the contrary, shows its limitation in not being very appropriate for a treatment of those positions. As is well known, Keynes explains unemployment as a state where the propensity to save is too great in relation to the propensity to invest and always assumes that saving and investment are positive in the positions treated by him. We can, therefore, hardly believe that these positions remain entirely unchanged from period to period. The continuing accumulation of capital should bring about a successive shift of the income and investment curves which must influence the values of all variables to some degree.

If we wish to denote the positions constructed by Keynes as equilibria, we must examine the possibility of applying the concept of equilibrium in the broader meaning, which was just referred to in the discussion of the correctly anticipated processes. It then becomes evident that the Keynesian constructions can hardly be interpreted in a reasonable way unless we assume that the economic subjects base their actions on a correct (even if not quite certain) expectation of what will happen during the period. How could otherwise an inter-relation be postulated between the variables during the period? In the examination of the simplified system of equations, which has been treated in the previous part, it can be observed that the size of speculation balances influences the rate of interest which, through investment, influences income which, in its turn, influences speculation balances through transaction balances. The circle is broken most easily by assuming that the rate of interest is originally fixed at such a level that the result is the relation between the two

11. The term "moving equilibrium" seems to be applicable in the first place to such equilibrium processes. It could, however, be extended to comprise also processes which can be characterized as "jumping equilibria", where equilibrium prevails during each period but discontinuous shifts (caused by exogeneous factors) sometimes occur at the boundary between two periods.

types of balances necessary for equilibrium.[12] Of even greater significance from a methodological point of view is the mutual connection between consumption and income which is a very important part of Keynes' theory. If consumers plan to spend a certain fraction of their income during the period, but the income is determined only after the consumption purchases are finished, the only possibility of avoiding the distinction between the expected income which is the basis of the consumption plans, and the realized income, which is the result of the carrying through of the plans—a distinction which the Keynesian school are rather unwilling to use—is to make them equal, i.e. implicitly to assume that individuals correctly anticipate their income.[13]

The question whether Keynes' constructions refer to equilibrium positions has, consequently, been answered in the affirmative, provided that the concept of equilibrium can be applied to correctly anticipated processes. If we let the static theory refer to the determination of the conditions for equilibria or equilibrium processes, Keynes' theory can also be called static.

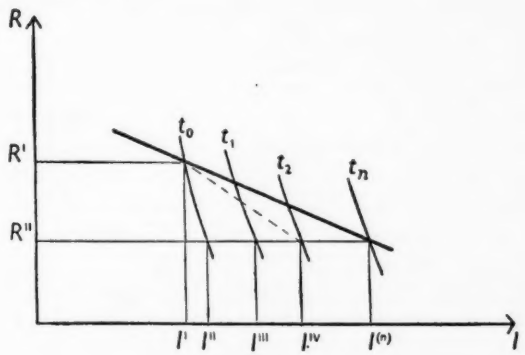

FIGURE 4

The next question which will be touched upon here is, in principle, of greater importance. It concerns the form of the functions which Keynes uses to determine the value of the variables entering his system. One difficulty which is not always properly considered is that the reaction of one variable to an assumed change of another variable is often *different in the short run and the long run.* If the

12. It is assumed here that the central bank, which can exercise a determining influence on the interest rate, judges the situation correctly, and that other bodies entering the capial market have fairly correct anticipations also, although the mere existence of speculation balances indicates some uncertainty inasmuch as a rise in the interest level is not considered impossible.

13. In a closer examination it is thus clear that Keynes' central equation (see note 3), $Y = C(Y) + I$ can be split into two functions (Y_o denoting the expected income):

$$Y = C(Y_o) + I$$
$$Y = Y_o$$

time factor has not been introduced in the function, various functions can be obtained by varying the assumption about the time occurring between the original and the resulting change. Only certain kinds of these functions are applicable in static theory and, therefore, the character of the theory is dependent on the kind of function used.

The reasoning can best be clarified by an example. Assume that in an equilibrium of the Keynesian type the rate of interest is lowered from position R′ to position R″ and that the effect of this on the size of investment is to be examined. It then seems likely that before plans have been adjusted to the changed position and before it is known whether the lowering of the interest rate is temporary or permanent, the increase in investment is relatively small. In figure 4 it has been assumed that investment during this first short period is increased only from I^{I} to I^{II}. To determine this increase of investment we can use a function which refers to the immediate reactions of the entrepreneurs to various levels of interest at the time t_o (the small steep curve). When the low rate of interest seems to be permanent, the entrepreneurs probably find it expedient to increase successively their investment per unit of time, first to I^{III}, then to I^{IV} etc. This process of expansion may be considered as terminated at the time t_n, when the investment per unit of time has reached the value I^n, a value which can then be expected to remain stable.[14] (To facilitate the following discussion it is assumed that at this point of time a new equilibrium has been reached which implies that the values of the other variables have also been adjusted to the lower level of interest.) It can be seen from the figure that the basis of these successive increases in investment is a shift of the short run investment functions (the small steep curves) up to the time t_n. The small curve at t_1 indicates that when the interest rate is lowered from R′ to R″ entrepreneurs invest the amount I^{III} if the interest rate is kept unchanged during the period, but when a new change in interest takes place they are in this position ready to adjust their investment in the way indicated immediately. The small curves at t_2 and t_n can be described in a similar way.

Apart from these short-run investment functions which, as shown, give the immediate reactions in any given position, we can form other functions which show how a change in the interest rate influences the extent of investment per unit of time, after a certain length of time has elapsed. The dotted line which connects the positions I^{I} and I^{IV} in the figure can thus be taken as an example of a function which shows how a change of the interest rate influences investment per unit of time after the time t_o–t_2 has passed. Further,

14. It has been hinted above that the continuing increase of capital may, ceteris paribus, be expected to lower to some degree the propensity to invest. But within the time horizons which are considered here, this modification of I^n may be assumed to be fairly negligible in relation to the shift from I^{I} to I^n.

it is also possible to form a function showing how investment adjusts itself to the interest level in the long run. This function has been illustrated in the figure by the line passing the positions I^I and I^n. Comparative statics refer to a comparison between various equilibrium processes and to an explanation of the divergences between them, commencing with differences between the parameters and functions taken as given in the respective systems of simultaneous equations. In comparative statics we can obviously use only long-run functions and, furthermore, only those of a certain kind; all values of variables must refer to stationary or correctly anticipated conditions, as otherwise we have no right to postulate a relation of interdependence between them. Functions of this type could be denoted as *static long-run functions*. (In figure 4 the long curve is, as has been stated earlier, an example of these functions.) In another branch of theory we can study the character of a given equilibrium, e.g. in which respects it is stable or unstable, by examining the immediate reactions to certain assumed changes. Here short-run functions should, naturally, be used, but only those which refer to the equilibrium in question. They can be called *static short-run functions*. (In the figure they are represented by the steep curves which refer to the points of time t_o and t_n.)

Starting from this important distinction between static long-run and short-run functions—which in earlier static theory was as a rule neglected by disregarding the element of time—it can be maintained that systems of simultaneous equations of the Keynesian type can be of two different kinds:

(1) Systems of static *long-run functions* which make it possible to apply the methods of comparative statics. From a system of this kind it can be seen which equilibrium corresponds to assumptions made regarding parameters and functions and how the equilibrium is shifted when these assumptions are changed. Nevertheless it is not possible to draw any definite conclusions from the system regarding the immediate effect of an assumed change of parameters or functions.

(2) Systems of static *short-run functions* which can be used only in a study of the directions of the movements initiated by an assumed change of the parameters or functions in the equilibrium situation to which the system refers. With this type of system we must start from an equilibrium (which can be determined according to the above-mentioned method) and choose the short-run functions which are valid at this position. The equilibrium situation therefore is fundamental in relation to the functions. If equilibrium is upset, for example through a change in parameters, the functions will

be successively modified to a greater or lesser degree.[15] A new equilibrium in this case cannot be constructed with the aid of the original system of functions. But this system is a good starting point for the determination of the dynamic process which is induced by the disturbance of equilibrium and which in some cases may move towards a new equilibrium.

These two types of equilibrium systems show great similarities from a formal point of view: the equation systems can be built in the same way; their solution represents in both cases equilibrium positions; and if the systems are correlated, the long-run equilibrium is identical with the short-run equilibrium. It is, therefore, important to observe that the two systems have qualities so essentially different that they serve entirely different purposes: the long-run system to determine the conditions for an equilibrium and the short-run system to determine the directions of movement from an equilibrium. It follows that the systems are complementary to each other in a useful way, and both have their given places in a rational theoretical structure. It is, however, clear that it should also contain connecting parts of a dynamic character, for it is not of very great use to know the conditions and the properties of a desirable equilibrium if we do not know the possible paths towards it.

It is remarkable that the Keynesian school has as a rule not realized, or in any case has not attached much weight to, the distinction which we have here tried to clarify. Their procedure frequently seems to combine in the same system some short-run functions (usually the interest and investment functions) and some long-run functions (especially the important consumption function or, as it has been formulated here, income as a function of saving). Commencing from this mixed system which is of little value for analysis and at any rate very difficult to handle, conclusions are sometimes drawn concerning the conditions for various equilibria (which presupposes a purely long-run system) and sometimes conclusions concerning the directions of movement from given positions (which presupposes only short-run functions). Such conclusions must naturally be more or less debatable. This criticism concerns particularly the great multitude of Keynes' more uncritical followers who interpreted and represented the master's ideas without the many qualifications that he himself had made with his strong sense of realism.

In the following we shall outline the consequences for the Keynesian constructions involved in making a clear distinction between static long-run and short-run functions.

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15. Figure 4 shows how the short-run investment function which relates to the original equilibrium is successively shifted after the lowering of rate of interest at t_o.

INPUT-OUTPUT ANALYSIS

1. *The Analysis of Productive Activity*

This paper examines the extraordinarily close relation between Keynesian theory and input-output analysis. Notwithstanding its Walrasian parentage, input-output analysis has close kinship to the conceptual system of Lord Keynes' *The General Theory*. Both are pre-eminently concerned with the *entire* productive system of the community. Both take as their primary aim the explanation of the levels of output and factor-employment of the community. Each is inclined to regard labour as the only variable scarce resource of importance to the community and hence to concentrate on the problem of the equilibrium level of employment of *labour*. Indeed they differ essentially in this alone: where Keynesian analysis regards all industry as a single homogeneous aggregate—or at most as comprising the "consumer-goods" and the "investment-goods" industries—input-output analysis recognizes the existence of many industries. Input-output analysis therefore may be regarded as a development of the analysis of equilibrium levels of social output and employment from the single-industry case of *The General Theory* to the many-industry case where the number of industries may be three, thirty or three hundred.

In the past input-output analysis has met strong criticism because it has proceeded under very restricted assumptions.[1] Though these assumptions have been made for both statistical and computational reasons, it will be suggested below that they are unnecessarily restrictive. A more liberal set of assumptions will be proposed under which input-output analysis, notwithstanding its deficiencies, should prove to be a more powerful technique than is at present generally accepted.

2. *The Data of the Analysis*

Any analysis of the way in which the levels of national production and employment are determined must proceed from a fundamentally simple conception of society's productive system, viz. that the services of physical resources flow into the industrial structure from which in turn there is an outflow of commodities to consumers. By "industrial structure" is meant the entire collection of the nation's industries, each industry having five main aspects or characteristics which are of prime concern to the economist.[2] These characteristics of an industry are:

1. The most notable assumptions are those of: a single scarce resource; fixed technical coefficients; fixed consumption coefficients or a given bill of goods. They are discussed below.
2. Throughout the discussion it will be assumed that the output which an industry will obtain from any given group of productive inputs will be the same irrespective of the number of firms into which the industry is divided.

i. the techniques of the industry's productive process;
ii. the conditions of entry of firms into the industry;
iii. the "equi-marginal productivity" conditions for maximizing profit in the industry;
iv. the "intersector" condition that in equilibrium the total output of a commodity shall equal the sum of demands for it;
v. the necessary equality of total receipts and total costs (which furnishes a definition of the industry's "profit").

The reader is likely to agree that the nation's productive system might quite conveniently be regarded as comprising three main parts: physical resources, industrial structure, and individuals' tastes (notably in the roles of resource-owner and of consumer). What is less likely to command ready agreement is the further proposition that in order to explain the level of national production the sole data required are a description of the productive system in terms of: the factor-supply function for each original resource whose services are used by the industrial structure; ;the set of five characteristics (the "five-set") describing *each* industry in the industrial structure; and the consumer-demand function for each final good, representing the state of consumers' tastes. A most convenient way of establishing the truth of this last proposition is to set up our argument in precisely the postulated form—doing so first in the single-industry case of Keynes' *The General Theory* and subsequently proceeding to extend the analysis to the many-industry case. This is the procedure which will be followed in the following sections.

At this stage the central thesis of the paper may be re-stated as follows: Any attempt to explain the determination of the levels of social production and employment must take the form of elucidating the implications of specific types of data which have been listed above. The work of Walras, Leontief and Keynes all takes this form, the differences between their theories deriving merely from differences in assumption as to the nature of the physical world. The opportunity is taken in Section 4 to widen the typical scope of Leontief's analysis by making less restrictive assumptions about the physical world.

3. The Keynesian Case

The core of the argument of *The General Theory* may now be set out in terms of the above discussion. First it must be pointed out that since *The General Theory* is concerned with under-employment equilibrium, the level of national productive activity will be determined by the demand functions and not by the availability of factors. Hence the labour supply function has no place in the discussion so

long as it can be correctly assumed that the community will not reach full employment. Turning now to consumers' tastes, Keynes postulated that the volume of goods demanded by consumers is determined by the level of real income; moreover, the marginal propensity to consume is less than one and may be constant. (This constancy is not essential to the argument, but enables its results to be stated in more dramatic form.) Expressing this algebraically we have

$$C_1 = a + cX_1, \quad .. \; .. \; .. \; .. \; .. \; .. \quad (1)$$

where X_1 is the volume of the national product (and hence national real income), C_1 the volume of consumption; a, c are constants and $0<c<1$.

The factor-supply function and the consumption function have now been examined. Turning to the third "part" of the productive system, i.e. the industrial structure, Keynes assumed in effect that society has but a single consolidated industry, the "five-set" for which is as follows: The production function sets out the relation between the input of labour and the volume of the social product, all other factors being assumed fixed. This production function may be stated in the general form

$$X_1 = f(N) \quad .. \; .. \; .. \; .. \; .. \; .. \; .. \quad (2)$$

where N is the level of employment. Second, as to conditions of entry into industry, it is perfectly consonant with Keynes' analysis to assume for the present that the industry is governed by an established normal profit rate on the value of output. This may be expressed

$$g = s_1.X_1.P_1 \quad .. \; .. \; .. \; .. \; .. \; .. \; .. \quad (3)$$

where g is the level of industry profits, P_1 the price of a unit of output and s_1 is the normal profit rate which is a known numerical constant. Third, Keynes was relieved of the need to discuss equi-marginal productivity conditions since these are needed to determine relative rates of input of factors only if there *is* more than one variable input—and in the present case the input of labour alone is variable. Fourth, the intersector condition reads that in equilibrium

$$X_1 = C_1 + I_1 \quad .. \; .. \; .. \; .. \; .. \; .. \quad (4)$$

where I_1 is the volume of social product demanded on investment account and is here assumed to be a known parameter. The fifth characteristic of the industry is that the value of output shall equal the sum of the wage-bill and the level of industry profit. This may be expressed as

$$X_1P_1 = N.P_n + g \quad .. \; .. \; .. \; .. \; .. \quad (5)$$

where P_n is the wage-rate. With this last definition, the data required

to ascertain the levels of production and employment are assembled in five equations.

It chances that in order to explain how the level of production is determined, Keynes needed only two of the above equations, viz. the consumption function (1) and the intersector condition (4). This need for only two equations can be regarded as fortuitous since the remaining three equations are also needed if the volume of employment and the price-level (in wage-units) are to be ascertained. However, this fortuitous simplicity has had considerable propagandist value since it meant that the determination of production could be illustrated with a very simple diagram, the algebraic equivalent of which is this: By substituting equation (1) in equation (4) we have the result

$$X_1 = \frac{1}{1-c}.(a + I_1) \quad .. \quad .. \quad .. \quad .. \quad .. \quad (6)$$

in which, c being the marginal propensity to consume, $\frac{1}{1-c}$ is the "multiplier". Since both a and I_1 are known parameters, the equilibrium level of the social product is determined. The corresponding equilibrium level of (less than full) employment can be promptly ascertained from the production function. Finally, the commodity price level can be determined (in wage-units) by reference to the normal profit rate and the equation of total receipts and costs.

4. The Leontief Case

Professor Wassily Leontief's input-output analysis can be regarded as an extension of the argument of the preceding section to the many-industry case.[3] The analysis has the same objectives: to determine the equilibrium levels of output and employment. However, with respect to each of the three main parts of the productive system —physical resources, industrial structure, consumers' tastes—input-output analysts have habitually made a critical assumption: first, that labour is the sole variable scarce resource; second, that the productive process of each industry is characterized by fixed technical coefficients;[4] third, that the community spends an unchanging proportion of its real income on each commodity. It should be added, however, that, because of criticism of this third assumption, post-war developments of input-output analysis have usually used the alternative assumption that the "final bill of goods" demanded by consumers is a known parameter.[5]

3. W. Leontief, *The Structure of American Economy, 1919-1939*, O.U.P., 1951; W. Leontief and others, *Studies in the Structure of the American Economy*, O.U.P., 1953.

4. "Fixed technical coefficients" imply that to produce one unit of product, we require k units of labour, j units of coal, and so on—where k, j, ... are known numerical constants. This assumption (generally regarded as the hall-mark of Leontief analysis) can be broken down into two components: the assumption of "constant scale returns", and that of "fixed proportions" between inputs. It will be noted that this latter assumption relieves Leontief of the need to discuss equimarginal productivity conditions.

5. The theoretical system is then said to be "open" with respect to the bill of goods.

The previous paragraph lists the main characteristics of the original or Leontief form of input-output analysis. Those simplifying assumptions were made in order to minimize the very real computational problems involved in analysing a many-industry system. However, it is suggested that the assumptions listed are unnecessarily restrictive. What is really critical for input-output analysis is that all structural relations of the productive system can be geometrically represented solely by straight lines or planes[6]—and in particular this must be true of all production functions and consumption functions. If this wider view of input-output analysis is used, it is possible to analyse a greater variety of situations than in the Leontief system. Thus the existence of land as well as labour can be recognized—as well as subdivisions of these omnibus categories. As to production functions, cognizance can be taken of an observed characteristic of many industries, viz. that the industry's labour force includes a substantial portion (b) which remains constant over wide ranges of output—showing a relation of the form

$$x_{nl} = b + aX_l,$$

where x_{nl} is the input of labour into industry l, X_l its output, and a, b are numerical constants.[7] Again, the wider analysis can handle consumption functions of the form

$$C_r = a + bY + cP_r + dP_t, \quad .. \quad .. \quad .. \quad (7)$$

where Y is national income; P_r, P_t the prices of commodities r and t; C_r the quantity of r consumed; a, b, c, d are numerical constants.

The computational simplicity obtained through the three assumptions of the Leontief model largely justifies their use by Professor Leontief in his original development of input-output analysis. The wider view of input-output analysis here suggested appreciably extends the scope and power of the method. Though this wider view involves rather more arithmetic, it is still able to use standard mathematical procedures for the solution of elementary linear systems. In the following sections therefore we shall extend the general theory of employment to the case of many industries and more than one scarce resource, our only limiting assumption being the plane nature of all functional relations.

5. *The Method of Solution*

In Section 3 it was observed that the equilibrium level of production could be read off directly from equations (1) and (4),[8] and the level of employment then read off in turn from the pro-

6. The planes may, of course, be in more than three dimensions.
7. Cf. Burgess Cameron, "The Production Function in Leontief Models", *Review of Economic Studies*, Vol. XX(1), p. 65.
8. The three steps involved were: ascertaining equation (1); postulating equation (4); inserting in equation (4) the value for consumer-demand obtained from equation (1).

duction function. This extreme simplicity of the Keynesian case is lost when the existence of many industries is recognized. Nonetheless there is a standard procedure for the solution of the many-industry case which exactly parallels that used for the Keynesian case and will now be detailed. This will be followed in Section 6 by an example to illustrate the application of input-output analysis. The reader will observe that the ensuing argument takes the logical form of deducing the implications of data, all of which are stated in one or other of three forms: factor-supply functions, industry "five-sets" or consumer-demand functions.

With the admission of many industries comes the recognition also that the consumers' demand for a commodity depends not only on income, but also on the price of the good and the prices of competing (and completing) goods. Accordingly the first step towards ascertaining the equilibrium level of national employment and output is to ascertain commodity prices in order that consumer-demand may once again be stated in terms of income. Secondly, the intersector equilibrium conditions of the industries are reframed in the *aggregative* condition: in equilibrium the national level of employment of labour equals the total demand for the services of labour. By referring to the production functions which specify the labour-content of each commodity, this total demand for labour can be stated in terms of the several consumer-demands (e.g. if 0·01 man-years are needed to produce a ton of wood, then a demand for wood of C_w implies on this account a demand for labour of $0{\cdot}01C_w$ man-years). Similarly we have the aggregative condition: the amount of land used equals the total demand for land services; and since the production functions specify the land-content of each good, the total demand for land services can be expressed in terms of the several consumer-demands. Thirdly and finally, by inserting in these aggregative conditions for labour and land, the values for consumer-demand obtained in the first step, the equilibrium levels of employment of labour and land are obtained, as well also as the equilibrium levels of consumption and output of each industry. It is true that in the first step the several consumer-demands were only determined in terms of the national income, i.e. of the total of the wage-bill, rents and profits. In the third steps, however, by using the aggregative conditions, we are able to determine the numerical values of all these elements simultaneously.[9]

One rider to the above procedure must be mentioned. Just as it is necessary in both the single-industry and many-industry cases to ascertain whether or not the labour force will be fully employed,

9. The three steps set down in this paragraph should be compared with those listed in footnote 8. The reader will find this paragraph useful as a guide in covering the arithmetic terrain of Section 6.

so too it is equally necessary to ascertain whether the services of all land will be used in industry. These questions are solved by the pedestrian method of ascertaining the implications of each possibility. Thus if land is available for rent at any price it can obtain, the postulate that land may be a free good implies a definite level of demand for land use. If this level exceeds the amount of land available, the postulate is disproved, land rent will be positive and all land employed in industry.

Notwithstanding the wealth of detail that the many-industry case introduces into the study of the productive system, it is no surprise that the above procedure yields results of the same form as in the Keynesian case. For example, a value for the equilibrium level of national employment is obtained in which the multiplier appears as before—but now "the marginal propensity to consume" is the sum of the weighted marginal propensities to consume for each commodity.[10]

6. *A Five-Industry Example*

To illustrate the argument of the preceding Section, we may consider a hypothetical community having five industries and two homogeneous resources, land and labour. The institutional data of the society are set out in three parts, relating respectively to: physical resources; the structure of industry; the tastes of consumers —while all rates of investment are assumed to be known. All structural relations of the productive system will be found capable of geometric representation as straight lines or planes.

It is assumed then that there is a labour force of one million men and an area of 3·124 million acres of homogeneous cultivatable land—both of these resources being freely available at whatever price their owners can obtain for their services. It is convenient (though not necessary) to assume that the established normal profit rate is the same in each industry—let us say, 10 per cent. The five industries are: rice, cotton, woven cloth, timber, building—in this case conveniently referred to by the single commodity each produces. Their production functions are as follows: The rice industry requires 0·01 acres per bushel of output and 0·002 man-years per bushel. The cotton industry requires 0·005 acres per lb. of output and 0·001 man-years per lb. The weaving industry (including ginning and spinning) requires 2 lb. of cotton per square yard of output of woven cloth, while it employs a labour force comprising firstly a fixed or basic group of 5,000 men and a variable group whose size is determined by the requirement of an additional 0·00012 man-years of input for each square yard of cloth produced. The timber industry requires 30 man-years of labour per million super feet of output. The building

10. Refer to Mathematical Note, equation (13).

industry requires 0·08 man-years per square and 0·0005 million super feet of timber per square of output. The foregoing technical data record the inputs of labour, land and materials into industry on *current* account. In addition it is assumed that the investment demand for buildings by the woven cloth industry is 50,000 squares of building space.

The consumption functions for rice, woven cloth and timber respectively, showing demand determined by national income and by prices (all measured in wage-units), are:

$$C_r = 48{,}000{,}000 + 160Y - 360{,}000P_r + 280{,}000P_w + 40{,}000P_t; \quad (8)$$
$$C_w = 20{,}000{,}000 + 60Y + 250{,}000P_r - 300{,}000P_w + 33{,}000P_t; \quad (9)$$
$$C_t = 600 + 0{\cdot}003Y + 4{\cdot}5P_r + 3P_w - 6P_t; \quad \ldots\ \ldots\ \ldots\ \ldots \quad (10)$$

in which C_r, C_w, C_t are the quantities of rice, woven cloth and timber demanded; P_r, P_w, P_t are their respective prices; and, to simplify the arithmetic, Y is defined as 1·1 (*wage-bill*).[11] Finally, the demand for building by private consumers (C_b) is given as 2·568 million squares.

With this assembly of information we may proceed to the task of ascertaining the equilibrium levels of employment, output and prices in this market economy. A primary problem is to ascertain whether labour will be fully employed. This is readily done by *assuming* full employment and regarding some single component of demand, *let us say* C_b, as an unknown residual to be determined by the available resources. This is the procedure to be used here. It will be found that with full employment of labour the demand for land-use would exceed the available supply if land were a free good. It follows then that all land resources will be employed at some positive rental.

From the cost equations of the five industries, each of which is of the form

Value of output = *Wage-bill* + *Land rent* + *Cost of materials* + *Profit*

we can, by dividing the entire equation through by the volume of output of the commodity and then introducing the production function information, determine the commodity-prices in wage-units as follows:

$$\left.\begin{aligned} P_r &= (0{\cdot}00222 + 0{\cdot}111P_l) \text{ per bushel,} \\ P_c &= (0{\cdot}00111 + 0{\cdot}00555P_l) \text{ per lb.,} \\ P_w &= \left(0{\cdot}0026 + 0{\cdot}01234P_l + \frac{5{,}555{\cdot}5}{C_w}\right) \text{ per sq. yd.,} \\ P_t &= 33{\cdot}33 \text{ per million super feet,} \\ P_b &= 0{\cdot}107 \text{ per square.} \end{aligned}\right\} \quad \ldots\ \ldots \quad (11)$$

11. The national income is of course greater than this, being the sum of: 1.11 *times* the wage-bill, plus 1.11 *times* total land rents, plus 0.11 *times* the sum of the value of cotton used by the weaving industry and the value of timber used by the building industry.

In this preliminary determination of the set of commodity prices, the land rent (P_l) is as yet unknown—as also is consumption demand for woven cloth (C_w) which in equilibrium necessarily equals the volume of cloth produced.

These prices may now be inserted in the consumption functions (equations (8), (9) and (10)). By so doing, the reader will observe that the volume of consumption of each commodity can be determined, though in a form which includes the unknown P_l.[12] Of course, if we were not here using the full employment assumption as a lemma, then the volume of consumption would be known only in terms of the national income[13] as in typical Keynesian analysis.

The second step to a complete solution is to ascertain the demand for labour-services and to equate this to the available supply as an aggregative condition of equilibrium. Now the demand for labour (in man-years) on account of rice consumption is $0{\cdot}002C_r$, on account of woven cloth consumption is—directly and indirectly through the use of cotton—a basic amount of 5,000 *plus* a variable amount of $0{\cdot}00212C_w$, on account of timber consumption $30C_t$, and on account of demand for buildings by both consumers (C_b) and investors (I_b) the demand for labour is $0{\cdot}095\ (C_b + I_b)$ man-years. Hence, since full employment is postulated

$$0{\cdot}002C_r + 5{,}000 + 0{\cdot}00212C_w + 30C_t + 0{\cdot}095(C_b + I_b) = 1{,}000{,}000. \quad .. \quad (12)$$

In similar fashion, the demand for land-services must, in equilibrium, equal the available supply, i.e.

$$0{\cdot}01C_r + 0{\cdot}01C_w = 3{,}124{,}000 \quad .. \quad .. \quad .. \quad (13)$$

Thirdly, assembling equations (8), (9), (10) (with prices appropriately substituted from equation (11)) together with equations (12) and (13), it will be observed that we have five equations containing five unknowns, viz. the four levels of consumer-demand and the land-rent in wage-units. By solving these five equations we obtain the results: $C_r = 225{\cdot}333$ mil. bushel, $C_w = 87{\cdot}109$ mil. sq. yd., $C_t = 3{,}700$ mil. sup. ft., $C_b = 2{\cdot}568$ mil. squares, $P_l = 0{\cdot}1$ wage-units. The equilibrium position is then one of full employment. Had it chanced, however, that consumer-demand for home building were only two million squares, then the equilibrium position would be characterized by unemployment—since it has just been established that full employment will exist only if $C_b = 2{\cdot}568$ mil. squares. The exact nature of such an under-employment equilibrium can be ascertained by re-working the argument, viz. by replacing the full employment lemma with the known $C_b = 2$ mil. squares and proceeding as

12. The situation would be the same if the customary definition of national income were used.

13. Specifically, in terms of the level of labour employment and of the rent of land.

before—save only that the level of employment, and not the consumer-demand for building, is an unknown to be determined.

The most felicitous way in which to set out the numerical results of the analysis is "the transactions table"—or input-output table—recording the sales (valued in wage-units) of each commodity to each industry and to consumers over a twelvemonth. For the above full employment situation this is as follows:

Transactions Table

SOLD TO → / SALES OF ↓	(w-u.) Price	(million wage-units) INDUSTRY						Total Sales
		Rice	Cotton	Cloth	Timber	Building	Consumers	
Rice (bus)	.00333	—	—	—	—	—	.7511	.7511
Cotton (lb.)	.00166	—	—	.2902	—	—	—	.2902
Cloth (sq. yd.) ..	.0039	—	—	—	—	—	.3397	.3397
Timber (mil. s.f.) ..	33.33	—	—	—	—	.0436	.1233	.1669
Building (sq.) ..	.107	—	—	.0054*	—	—	.2752	.2806
Labour (m-y) ..	1.0	.4507	.1742	.0155	.1502	.209	—	—
Land (a-y)	0.1	.2253	.0870	—	—	—	—	—
Profit	—	.0751	.029	.034	.0167	.028	—	—
Total Purchases ..	—	.7511	.2902	.3451	.1669	.2806	—	—

*On investment account

The table records, for example, the total sales of timber valued at 0·1669 million wage-units, representing 5,009 mil. super feet at the current price—of which 1,309 mil. super feet were sold to the building industry at a cost of 0·0436 million wage-units.

7. Conclusion

The twofold purpose of this paper has been to propose a widening of the scope of input-output analysis as well as to set out its relation to aggregative analysis. Since the implication of these aims is clearly to extend the practice of input-output analysis, it may be well to conclude by drawing attention to two of the criticisms directed at it. The first is that the distinction between Keynesian and input-output analysis is one of degree rather than kind since, almost inevitably, input-output analysis involves some degree of aggregation of industries or processes. This point is well taken in view of the fact that even the most ambitious investigation is likely to aggregate the entire range of productive activities into, at most, a few hundred "industries". However, if input-output analysis were regarded as an endeavour to increase the power of the Keynesian analysis by

breaking down the complete aggregation of industries, the criticism is seen in better perspective.

A second, and more important, criticism is the inability of the foregoing input-output technique to analyse some forms of economizing activity, notably the choice between substitutable inputs.[14] Where the steelmaster, the distiller or the farmer is confronted with a *limited* number of alternatives as to the nature of his plant and as to the ratio of the rates of flow of inputs, input-output analysis can be used without resort to more advanced mathematical techniques. It is not at all improbable that this will be found to be the characteristic situation in industry. However, current investigation into production functions may yet find that a characteristic form of the function for an industrial process is one in which, for example, scale returns are constant and inputs are *continuously* substitutable over a finite range[15]—a result which would be a crippling blow for both the original Leontief method and the wider technique suggested above. So far empirical work on this has produced a surprising preponderance of evidence in favour of Leontief. However, further data are required on production functions before the development of input-output analysis can be assured.

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14. It shares this limitation with Keynesian analysis and, very largely, with partial equilibrium analysis (since the latter rarely permits more than one price to be a variable).

15. E.g., if X_w is the outpupt of wheat, x_{nw}, x_{lw} the inputs of labour and land respectively, then if the industry's production function were

$$X_w = \frac{x^2_{nw}}{x_{lw}} - 50\,\frac{x^3_{nw}}{x^2_{lw}}$$

labour and land are continuously substitutable so long as their ratio is greater than 1/100 and less than 1/75.

Mathematical Note

THE EQUILIBRIUM LEVEL OF NATIONAL EMPLOYMENT

The purpose of this Note is to set out the steps involved in ascertaining the equilibrium level of employment and output in a community having i industries. The argument applies only to productive systems in which all production functions, consumption functions, factor-supply functions and conditions of entry into industry can be represented exclusively by straight lines or planes. To make clear the meaning of this limitation, the most general types of function will be used that input-output analysis can handle without resort to special devices (such as representing a curved line by a series of straight lines). Complications not analysed here include: interest and

amortization charges, production of a commodity by more than one industry, joint production.

Determining Demand as a Function of Income

Since consumption demand for a commodity is usually determined by commodity prices as well as by income, the first step is to determine commodity prices. This, apart from being an end in itself, enables consumption demand for each good to be expressed in terms of income (as in Keynesian analysis). The price of a commodity is ascertained by reference to the industry's cost equation which states the equality of total receipts and total cost:

$$X_1P_1 = \overset{i}{\Sigma} x_{11}.P_1 + x_{n1}.P_n + x_{l1}.P_l + s_1.X_1.P_1, \text{ for each industry } 1, 2, \ldots, i \quad (1)$$

where X_1 is the output of commodity i, P_1 its price and x_{ij} the quantity of it used as input by industry j; s_1 is the normal profit rate in industry i; P_n, P_l are the respective prices of the services of labour and land.

The production function of an industry is assumed to be of the following form:

$$\left.\begin{aligned} x_{i1} &= a_{i1}X_1, \text{ for each material input } i \\ x_{n1} &= b_{n1} + a_{n1}X_1, \text{ for labour input} \\ x_{l1} &= a_{l1}X_1, \text{ for land input} \end{aligned}\right\} \text{ for each industry } 1, 2, \ldots, i \ldots \ldots \quad (2)$$

where all a and b are numerical constants.

By substituting the values of the x's from the production functions in the cost equations, then simplifying, and taking the wage-rate as numéraire ($P_n = 1$), the cost equations now read

$$P_1.(1-s_1) = \overset{i}{\Sigma} a_{i1}.P_i + \frac{b_{n1}}{X_1} + a_{n1} + a_{l1}.P_l, \text{ for each industry } 1, 2, \ldots, i \ldots \ldots \quad (3)$$

Now we know the intersector conditions of industries to be

$$X_1 = \overset{i}{\Sigma} x_{i1} + C_1 + I_1, \text{ for each industry } 1, 2, \ldots, i \ldots \ldots \quad (4)$$

where I_1 is the final demand for commodity 1 by all industries on investment account. It follows, since

$$\overset{i}{\Sigma} x_{i1} = \overset{i}{\Sigma} a_{i1}.X_1,$$

that these intersector conditions determine the equilibrium levels of output of each industry in terms of the final demands on consumption and investment account, i.e.

$$X_1 = \frac{\begin{vmatrix} (C_1+I_1) & -a_{12} & 1-a_{33} & -a_{34} & \dots \\ (C_2+I_2) & 1-a_{22} & -a_{43} & 1-a_{44} & \dots \\ (C_3+I_3) & -a_{32} & -a_{13} & -a_{14} & \dots \\ (C_4+I_4) & -a_{42} & -a_{23} & -a_{24} & \dots \\ \cdot & \cdot & \cdot & \cdot & \\ \cdot & \cdot & \cdot & \cdot & \\ \cdot & \cdot & \cdot & \cdot & \end{vmatrix}}{\begin{vmatrix} 1-a_{11} & -a_{12} & -a_{13} & -a_{14} & \dots \\ -a_{21} & 1-a_{22} & -a_{23} & -a_{24} & \dots \\ -a_{31} & -a_{32} & 1-a_{33} & -a_{34} & \dots \\ -a_{41} & -a_{42} & -a_{43} & 1-a_{44} & \dots \\ \cdot & \cdot & \cdot & \cdot & \\ \cdot & \cdot & \cdot & \cdot & \\ \cdot & \cdot & \cdot & \cdot & \end{vmatrix}} \qquad (5)$$

The right-hand side of this equation may be referred to as $|X_1|$.

Referring back to the cost equations (3) therefore, the value of X_1 can be stated in terms of final demands. Hence it is seen that the cost equations determine all commodity prices (expressed in wage-units) in terms of land rent and of final (consumption and investment) demands. The intermediate solution of the levels of commodity-prices is, then, as follows:

$$P_1(1-s_1) = \sum_{i} a_{i1}.P_i + \frac{b_{n1}}{|X_1|} + a_{n1} + a_{11}.P_1, \text{ for each industry } 1, 2, \dots, i \dots \dots \qquad (6)$$

Hence,

$$P_1 = \frac{\begin{vmatrix} \left(\frac{b_{n1}}{|X_1|} + a_{n1} + a_{11}.P_1\right) & -a_{21} & -a_{31} & -a_{41} & \dots \\ \left(\frac{b_{n2}}{|X_2|} + a_{n2} + a_{12}.P_1\right) & 1-s_2-a_{22} & -a_{32} & -a_{42} & \dots \\ \left(\frac{b_{n3}}{|X_3|} + a_{n3} + a_{13}.P_1\right) & -a_{23} & 1-s_3-a_{33} & -a_{43} & \dots \\ \left(\frac{b_{n4}}{|X_4|} + a_{n4} + a_{14}.P_1\right) & -a_{24} & -a_{34} & 1-s_4-a_{44} & \dots \\ \cdot & \cdot & \cdot & \cdot & \\ \cdot & \cdot & \cdot & \cdot & \\ \cdot & \cdot & \cdot & \cdot & \end{vmatrix}}{\begin{vmatrix} 1-s_1-a_{11} & -a_{21} & -a_{31} & -a_{41} & \dots \\ -a_{12} & 1-s_2-a_{22} & -a_{32} & -a_{42} & \dots \\ -a_{13} & -a_{23} & -a_{34} & -a_{43} & \dots \\ -a_{14} & -a_{24} & \cdot & 1-s_4-a_{44} & \dots \\ \cdot & \cdot & \cdot & \cdot & \\ \cdot & \cdot & \cdot & \cdot & \\ \cdot & \cdot & 1-s_3-a_{33} & \cdot & \end{vmatrix}} \qquad (7)$$

The right-hand side of this equation may be referred to as $|P_1|$.

The consumption function for commodity 1 may be conveniently presented in the form which shows consumers' *expenditure* on commodity 1 (C_1P_1) as determined by national income (Y) and by the prices both of commodity 1 and of other commodities, i.e.

$$C_1P_1 = c_1 + c_{1y}Y + \sum^{i} c_{1i}P_i, \text{ for each commodity } 1, 2, \ldots, i, \ldots \quad (8)$$

where all c are known numerical constants and in particular c_{1y} may be termed consumers' marginal propensity to spend income on commodity 1. Using the results obtained from the cost equations we have

$$C_1 = \frac{1}{|P_1|}\left[c_1 + c_{1y}Y + c_{11}|P_1| + \sum^{j} c_{1j}|P_j|\right]$$

, for each commodity 1, 2, ..., i .. (9)

where j comprises the $(i-1)$ commodities 2, 3, ..., i.

The Conditions of Equilibrium

The intersector conditions (together with the production functions) collectively imply the aggregative condition of equilibrium: total employment of labour equals total demand for labour services. Now the labour required to produce a commodity both directly and indirectly through the materials it uses may be divided into two parts: the fixed labour force (if any) and the variable labour force of the industries involved (represented respectively by the b_{n1} and a_{n1} coefficients in the production functions). If A_{n1} represents the *total* absorption of variable labour (direct and indirect) into one unit of commodity 1, the total demand for labour in the community may be written

$$\sum^{i} b_{n1} + \sum^{i} A_{n1}(C_1 + I_1), \ldots \quad (10)$$

and this in equilibrium equals the total level of employment, $\sum^{i} x_{n1}$.

Similarly in equilibrium, the total usage of land must equal the total demand for the services of land, i.e. if A_{l1} represents the total absorption of land (direct and indirect) into one unit of commodity 1,

$$\sum^{i} A_{l1}(C + I_1) = \sum^{i} x_{l1}. \quad \ldots \quad (11)$$

These two aggregative conditions of equilibrium, together with the consumption functions (9) form the crux of the argument. The manner of their use requires some attention however, for it is necessary to ascertain whether either or both of the original factors will be fully employed. It will have been noted that the wage-rate has been used as numeraire—this for the reason that of all resources labour alone must, for institutional reasons, receive a positive price (a zero price being valueless as numeraire). Since there is no reservation price on land in the present model, we can say that either the

ratio of land-rent to the wage-rate will be zero or all available land will be used in productive activity. These two possibilities will be successively explored—in the first case, the volume of land-use being unknown, and in the second case the relative land-rent being unknown. The structural relations will determine the result since, if the first alternative is incorrect, the demand for land will exceed that available. *At the same time,* we have to determine whether labour will be fully employed. This is readily ascertained by leaving some part of investment demand to be determined as a residual under full employment —so that comparison of the residual with the actual component of investment demand indicates whether or not there will be full employment.

Accordingly in the case, for example, where all land is assumed employed and some labour unemployed, the system of equations determining the equilibrium levels of national employment and output comprises the consumer-demand functions (9), the equation (10) of the total demand and supply of labour, and the equation (11) of the demand for land services to the *known* quantity of land $\overset{i}{\Sigma}x_{1l}$.

The Level of Employment

An overall view of the determination of the level of employment can be obtained as follows. By substituting the consumer-demand functions (9) in equation (10) we have

$$\overset{i}{\Sigma}x_{n1} = \overset{i}{\Sigma}b_{n1} + \overset{i}{\Sigma}A_{n1}\left\{\frac{1}{|P_1|}\left[c_1 + c_{1y}Y + c_{1l}|P_l| + \overset{j}{\Sigma}c_{1j}|P_j|\right] + I_1\right\} \quad (12)$$

in which j comprises the $(i-1)$ commodities, 1, 2, 3, ..., $(i-1)$.

Now we know that the national income Y measured in wage-units will be a factor a *times* the level of employment $(\overset{i}{\Sigma}x_{n1})$, a being determined by the system of equations. By writing $a.\ \overset{i}{\Sigma}x_{n1}$ for Y in equation (12) we obtain $\overset{i}{\Sigma}x_{n1} =$

$$\frac{1}{1-a\overset{i}{\Sigma}\frac{A_{n1}}{|P_1|}.c_{1y}}\left[\overset{i}{\Sigma}b_{n1} + \overset{i}{\Sigma}A_{n1}\left\{\frac{1}{|P_1|}\left[c_1 + c_{1l}|P_l| + \overset{j}{\Sigma}c_{1j}|P_j|\right] + I_1\right\}\right] \quad (13)$$

In this expression for the level of employment, the multiplier coefficient is the reciprocal of one *minus* the "marginal propensity to consume" where this is now the sum of the weighted marginal propensities to spend on consumer-goods—the weight being the ratio of the commodity's variable labour content to its price, divided by the ratio of the national wage-bill to the national income.

THE RESEARCH POLICY OF THE FIRM

1. Introduction

The purpose of this article is to analyse the research policy of the firm on the basis of general economic principles and the empirical information available, and to draw conclusions that can be measured against the facts by further empirical investigations.

We shall assume that the firm determines its research policy on the basis of comparing the estimated returns and costs of its research activities (as adjusted for risks), and not on a mere conventional basis (for instance, by simply spending an arbitrary percentage of its total revenue on research, for the sole reason that its competitors do the same). Admittedly, it is an open question to what extent this assumption is warranted. In many cases undoubtedly economic calculations of this kind do play an important part in determining firms' research policies. But in other cases the difficulty of forecasting the returns and the costs of research seems to result in firms basing their policy largely on mere conventional rules of thumb. In effect, it is still an unsettled issue even to what extent firms' policies in more fundamental matters (for example pricing or output) are actually based on economic calculations and to what extent they are merely conventional. Clearly there is a need for much more empirical investigation on these problems.

But, irrespective of the extent to which firms' research policies in reality depend on return-and-cost considerations, it seems to be of some theoretical interest to examine the laws governing the returns and the costs of industrial research and the factors determining its theoretical profit-maximum point, and to discover how the principles of the general theory of production apply to the very special case of producing new industrial methods (inventions) by industrial research.

2. Use Value of Inventions

It is worth while for a firm to undertake a research project only if its estimated returns (the estimated use value of the invention expected from it) exceed its estimated costs, all values being discounted for the present, and due allowances being made for the risks entailed.

The usefulness of a new invention for a firm consists in the possibility of innovations more profitable (in the possibility of larger cost reductions, greater quality improvements and more attractive new products) than the ones available with the management's existing knowledge.

We may distinguish expansive innovations, which raise the firm's revenue, and non-expansive innovations, which increase the firm's profits only by reducing its production and marketing costs. The former always involve price or quality competition with other firms (or measures to overcome the consumers' saving propensity) since the firm's revenue can be increased only at the expense of its competitors' revenues (or at the expense of the consumers' savings).

If a new invention results in a non-expansive innovation, its use value depends on the firm's output of the commodity to which the new device applies, on the unit cost of this commodity and on the percentage saving achieved in this cost.

On the other hand, if a new invention results in an expansive innovation, its use value depends on the extent of the price reduction or quality improvement that it makes possible, and on the responsiveness of the firm's revenue to price reductions or to quality improvements.[1] In general, competitive firms' revenues tend to be fairly responsive, monopolistic firms' revenues rather irresponsive, both to price changes and to quality changes.

Accordingly, the possibility of using new devices on a greater scale tends to encourage research by large firms. Their easier access to capital and their higher risk-bearing capacity also work in the same direction.

At the same time, in so far as large size tends to result in a monopolistic position, large firms tend to be less keen to develop quality improvements or new products. They may, on the other hand, be very anxious to develop cost-reducing devices,[2] but success in bringing down their costs is less likely to induce them to make price reductions.

Large firms tend, moreover, not only to have a higher use value for new inventions (with the above qualification), but also to face lower development costs since they can afford the best research staff and equipment and can undertake research on a large scale.

Of course, monopoly power tends to discourage quality-improving research beyond a certain point not only when this monopoly power is due to size, but in all other cases as well. And most important, monopoly power has this effect also when it is the result of successful innovation. It is usually worth while for a firm to secure a monopoly position for itself by being always "one step" ahead of its com-

1. The effectiveness of price reductions can be measured by the slope (or the elasticity) of the firm's total (or average) revenue curves for the relevant product.
In the case of quality improvements, we may represent the firm's total revenue earned on a given output of the relevant product as a function of a suitable physical parameter expressing the quality of the product (e.g. size, durability, specific weight, etc.). The slope of this curve shows the responsiveness of the firm's revenue to quality variations in this particular dimension of quality.

2. This must actually be the case as long as they put profit maximization above their demand for an easy life free from efforts and from risks. But, in actuality, a secure monopolistic position may easily undermine precisely this attitude. (Cf. T. de Scitovsky, "A Note on Profit Maximization", *Rev. Econ. Stud.*, Vol. II, pp. 57-60, 1949.)

petitors in quality-improving innovation, but, after a point, superiority in quality over one's competitors tends to bring quickly decreasing returns in terms of higher sales and revenue. The same is true for a price advantage over competitors. But no similar restriction applies to the profitability of cost-reducing innovations that aim, not at supporting expansive price reductions, but only at saving in costs. However large the firm's advantage in costs over its competitors, it is obviously always worth while to increase it still further.[3]

Another important factor influencing the use value of new inventions for the firm and its readiness to undertake research is the length of time over which it expects to be able to retain the higher innovation profits for itself in the face of competition, increased trade union demands and taxation.[4]

3. Development Costs of Inventions

By far the greater part of the development costs of an invention is the cost of research experiments. The size of the latter cost again depends on two factors: on the number of experiments needed and on the average unit cost of an experiment.

The number of experiments needed tends to be roughly proportional to the number of the possible alternative solutions to be tried out for the technical problems posed by the invention. This number may be called the *degree of indeterminacy* of the research project. It may vary between one and several thousand, because the research project may consist simply in trying out one particular suggested solution, but may just as well consist, for instance, in selecting a material with certain required properties out of a chemical group of several thousand members each of which has to be tested.

One of the factors determining this degree of indeterminacy is the number of the not-further-divisible technical problems involved in the development and practical use of the invention contemplated. This number may be called the *degree of complexity* of the research project. It depends primarily on the number of the constituent parts of the devised new appliance or on the number of part processes

3. It must also be kept in mind that every monopolistic position is relative and so is the insensitivity of monopolistic firms' sales to price reductions or quality improvements. Very great price reductions or quality improvements tend to be effective in the case of mononoplists as well, because they enable them to compete with other firms even if their own products are very imperfect substitutes for the latter's products. For instance, even if small quality improvements had little effect upon the sales of an artificial-silk manufacturer in a monopolistic position, the introduction of nylon might still be able to increase his market quite considerably by making people buy his products instead even of very different commodities, say, radio sets or theatre tickets. Moreover, innovation from time to time may be an essential preventive measure to discourage the entry of competitors. These considerations may account for the fact that actually a number of important quality improvements and new products have been developed by firms in a more or less monopolistic position.

4. As Professor Galbraith has rightly pointed out (*American Capitalism*, pp. 92-94), firms in a more or less monopolistic position have a better prospect of retaining these profits than firms in highly competitive industries have—which is another important factor accounting for the technological progressiveness of many monopolistic firms (cf. preceding footnote).

involved in the devised new production method. But special technical problems may be connected also with the use, operation, maintenance, repair, transportation, etc., of a new appliance, and all of these enter into the degree of complexity of the corresponding research project.

The degree of indeterminacy of a complex research project is the sum of the degrees of indeterminacy of the part problems involved if the latter are independent of each other for their solution. On the other hand, if these part problems are interdependent, then in principle any possible combination of the alternative solutions of each part problem has to be tried out, and the degree of indeterminacy of the whole project is equal to the product of the degrees of indeterminacy of the part problems. Other cases are intermediate between these two.

The degrees of indeterminacy of the technical problems emerging in a certain field tend to vary with the increase in our knowledge of it. As our knowledge advances, it becomes more and more possible to select for each problem the few most promising alternatives out of all possible solutions and thus to reduce the degree of indeterminacy of research projects.[5] At last, the solution of technical problems in a certain field may become a mere routine engineering task, a matter of simply applying well-established rules, involving little, or no, experimentation.

The average unit cost of experiments, also, tends to vary with advances in our knowledge. The progress in experimental techniques tends to reduce this cost in each particular field, but at the same time, as the old fields of research become exhausted and come to show decreasing returns, the centre of gravity of industrial research tends to shift to new fields in which it is harder and more expensive to produce the experimental conditions required, such as the fields of very high or of very low temperatures and pressures, of very high speeds, frequencies, voltages, etc.

The increase in the unit cost of the average research experiment is one of the reasons for the obvious fact that the real cost of the most important research projects tend to rise from decade to decade.

Another reason is the growing readiness both of commercial and of governmental research institutions to attack technical problems less ripe, at the time, for solution—that is, research projects with a high degree of indeterminacy (and also with a high risk of failure). This readiness itself is probably due both to the increase in the size and

5. The phase of decreasing degrees of indeterminacy is usually preceded by a phase of increasing degrees of indeterminacy without much practical importanc. As long as our ignorance is very great in a certain field, even the suggestion of a larger number of alternative possible solutions for a technical problem may meet with difficulties, and may become possible only with a further advance in our knowledge. But at this initial stage industrial research is hardly possible and worth while yet in that field.

in the capital resources of the "representative" firm and scientific institution and to the increasing research-consciousness of industrial and governmental leaders.

According to empirical investigations, the largest single item in research expenditure is Wages and Salaries. Mr. C. C. Furnas has found that in a sample of U.S. firms the median percentage spent on these has been as much as 68%,[6] which is comparable to the percentage of labour costs in total production costs for industries regarded as having a fairly high labour intensity and a fairly low capital intensity. Of course, the high percentage of labour costs in research is due to some extent to the relatively high rate of pay of research staff.

On the other hand, the importance of interest costs is fairly low in the case of industrial research[7] (as distinguished from non-commercial fundamental research) since, even in this age of large-scale research, private firms seldom undertake research projects that are expected to take more than a few years to complete, owing to the prohibitive risks entailed.

A realistic cost-accounting must make considerable allowances for risks in the case of research. Assuming "neutral" risk valuation[8] (i.e., the valuation of risks at their actuarial value), we must require that, on the whole, successful research projects should pay both for themselves and for the failures. Since, according to Mr. D. B. Hertz,[9] the average chance of success for an industrial research project is estimated at 10-50% depending on the industry, the effective costs of a successful research project must be multiplied by 2-10 to allow for this risk. (Apart from the risk of partial or complete failure, there is also the risk that costs may far exceed the original estimate.)

4. Total Research Expenditure of the Firm

The main factor in determining the total research expenditure of the firm is, of course, the extent to which worth-while research objectives are at the time available in its special field. Each particular field of research tends to show great fluctuations in this respect from time to time. After an important scientific discovery technical ideas worth developing tend to be abundant in the corresponding field for some time and research tends to be fairly profitable. But, once these ideas have been used up, a considerable period of stagnation

6. C. C. Furnas, *Research in Industry*, N.Y., 1948, p. 149.

7. The importance of depreciation costs is, however, often rather high owing to the relatively quick obsolescence of research equipment. An obsolescence period of five years on the average is a fairly conservative estimate.

8. In reality, most firms probably assign a value lower than their actuarial value to risky ventures, at least if the number of these is not high enough to secure the prevalence of the Law of Large Numbers. This means virtually adding a higher risk premium to the total costs of a successful research project.

9. D. B. Hertz, *The Theory and Practice of Industrial Research*, N.Y., 1950, p. 213.

may follow.[10] At the same time, the high profitability of research in a certain field does not necessarily encourage high research expenditures, nor does a low profitability of research necessarily discourage them, as we shall see presently.

Actually, the value productivity of research exhibits large fluctuations, not only owing to these fluctuations in its "physical" productivity, but also owing to the fluctuations in the economic value of inventions in each particular field due to the continual emergence of complementary or competitive inventions, or to changes in demand.

We shall describe as the "return curve of research expenditure" the curve representing the estimated total value of the inventions expected from the firm's research activities as a function of the firm's research expenditure (all values being discounted for the present and due allowances being made for the risks entailed). Figs. 1 and 2 represent two different firms' return curves of research expenditure.

FIG. 1

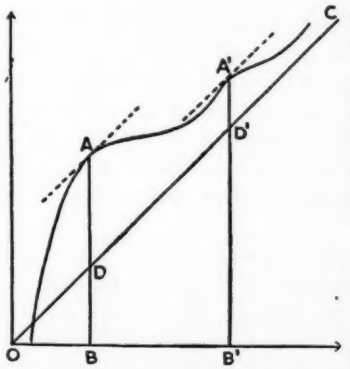
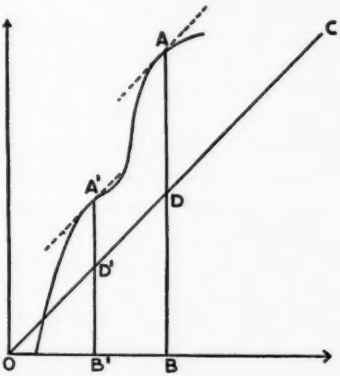


FIG. 2



Research expenditures are measured along the abscissa, and the value of the inventions expected from each reserve expenditure are measured along the ordinate. For instance, in the case of either of the two figures, the research expenditure denoted by OB corresponds to inventions valued all together at the amount denoted by AB.

We have drawn the lines OC at an angle of 45° to the axes, so that OB = BD and AD = AB — DB, which is the firm's net gain on its research activities. The firm will choose only such a research expenditure as corresponds to a positive net gain, that is, corresponds to a point at which the return curve rises above the line OC. If the return curve remains below the line OC over the whole of its course the firm will not undertake research activities at all.

10. See R. K. Merton, "Fluctuations in the Rate of Invention", *Quart. Jour. Econ.*, 1935, pp. 454-744.

Moreover, the firm will choose that particular research expenditure which corresponds to the highest net gain. On the other hand, the firm's net gain on research has a maximum at that point (or at those points) at which the return curve is rising at 45° and is concave from below. This is so because up to such a point a small ΔX increase in the firm's research expenditure would raise the value of the resulting inventions by an amount larger than ΔX, while beyond this point the opposite is true. If the return curve has several points at which the firm's net gain has a local maximum, then that point will be chosen at which the firm's net gain is the highest, that is, at which the vertical distance between the return curve and the line OC is the greatest. For instance, we have chosen the notations both for Figs. 1 and 2 so that $AD > A'D'$ and that therefore the firm's optimum research expenditure is OB, and not OB'. This means, however, in the case represented by Fig. 1 that the firm chooses the lower research expenditure out of the two alternatives, while in the case represented by Fig. 2 it means that it chooses the higher expenditure.

Simple reflection shows that a high (or low) general profitability of research in a given field means only that the return curve of research tends to rise, more or less over the whole of its course, much (or little) above the line OC, but does not imply anything at all as to whether the vertical distance of this curve from OC is *relatively* the largest in the range of higher or lower research expenditures, that is, as to whether a higher or a lower research expenditure is the most advantageous to the firm.

The decisive consideration in this respect is not the size of total returns, but rather the size of the average marginal returns over the relevant interval. The point is whether the average slope of the return curve is sufficiently steep (more than 45°) in the relevant intermediate range (say, in the intervals AA' and A'A respectively), which again depends on whether an increase in the firm's research expenditure would bring the solution of technical problems, of sufficient economic importance, within the range of the firm's research activities (which problems could not have been attacked at lower research expenditures). Even if in general the returns of research tend to be high in a certain field, it may still be true that an increase in research expenditure raises these returns further only a little, and does not pay as much as it costs. Conversely, even if in general the returns of research tend to be low in a given field, these returns may still be high on the margin in the relevant range and may justify a larger research expenditure.

Of course, the return curve of research expenditure may have a very different shape for two different firms even if both are

operating in the same field, depending especially on the size of each firm. The solution of an important technical problem tends to justify a high research expenditure in the case of a large firm, which has a higher use value for this solution, more easily than in the case of a small firm, which has usually a lower use value for it.

5. Specialization in Research

In the last section we have assumed that the firm is interested in developing only inventions that fall within its own special field. In effect, it has usually little use for those falling outside this field. It cannot utilize them by itself because the entry into a completely new field for which its staff, equipment and market connections are ill adapted, tends to entail prohibitive costs for a firm with established organization and traditions. Nor can it usually make a profit by selling them to other firms[11] owing to the imperfections of the market for inventions (for patent rights or industrial secrets).

The selling price of inventions tends to be considerably less than their real use value for the purchasing firm. This is due to a number of factors: to the small number of possible buyers; to the difficulty of estimating correctly the business results of adopting the invention; to the imperfect knowledge both of the seller and of the buyer, both of whom often tend to under-estimate the value of this commodity, the buyer for lack of relevant technical knowledge, the seller for lack of information about the buyer's business opportunities.

A further factor discouraging the production of inventions for the market is the impossibility for outsiders even to know what kinds of improvements are really needed, or are needed most, by a particular firm or industry, and thus to direct their research work into the most profitable channels.

Besides the specilization of the firm's productive and marketing facilities, a further factor limiting the scope of its research activities is the specialization of its research staff and equipment.

For instance, hardly any chemical firm would try to reduce its production costs by developing a new and better type of electro-motor even if it used electro-motors on a fairly large scale, except in very special conditions (say, when a new type of motor were absolutely essential for one of its important operations). Normally this would be left to the electro-motor industry, which could do it at much lower costs and could also make a more extensive use of the invention thus developed.

11. Firms do occasionally develop inventions for use by other firms, yet in general they do not do this in order to make a profit on selling these inventions, but rather in order to create a new market for their products, or to reduce the costs, and to improve the quality, of the raw materials and of the equipment they have to buy. Similarly, consultant laboratories do develop inventions for other firms, but they do this only to the latter's explicit order, and do not produce them simply for the market.

In this respect there are considerable differences between industry and industry. Some industries find their production methods largely determined by their equipment that they buy from other industries. Often these do not do anything to reduce their production costs except watching new developments in the industries producing their equipment and adopting these novelties once they have appeared. Their own research (if there is any) they tend to concentrate upon developing new qualities and completely new products. For example, the producers of wooden and metal toys tend to use simply those wood-working and metal-working tools or machines that happen to be available, without much bothering to improve them. Instead, they tend to give the best of their effort to bringing out new types of toys each year.

On the contrary, industries that are not much dependent for their production methods on their equipment (such as a part of the chemical industry, which uses, to exaggerate slightly, the same kinds of "retorts" for each of its productive operations) tend to spend a good deal of thought on improving their production methods.

6. Interdependence Among Firms

Both the direction and the rate of a firm's research activities tend to depend on the research activities of its competitors. This dependence may work either way. The fact that a competitor is known to be engaged in a certain field of research may be a reason for the firm equally to undertake, or not to undertake, research in the same field. Moreover, if a firm reacts by withdrawing from this field of research, it may mean really to surrender this line of business to the competitor or, on the contrary, to stay in this line, living on its competitor's results.

This is so because, if the competitor succeeds in his research and comes out with a new invention in this field, this fact will affect at the same time the values of three different economic variables for the firm, making its actual reaction the resultant of three different forces.

(1) If the competitor brings out a new invention, the development costs of an invention in this particular field will decrease for a firm, provided that it awaits the time at which the competitor's results become available for imitation.[12] (Indeed, the cost may fall to nil, because the competitor's results may make any further research unnecessary.) Let D be (the present value of) the development costs of such an invention, and let t be the time at which its development will be started. Then the function $D = D(t)$ will be left unchanged

12. This may be to some extent offset by the additional costs of developing special devices to circumvent the competitor's patents.

for values of t representing the near future, but will shift downwards for values of t representing a more remote future.

(2) Moreover, the firm's profits on introducing an invention belonging to this field will be diminished by the competitor's innovation.[13]

(3) Finally, the firm's profits on carrying on its present methods without innovation will also decrease.[14]

Let $P = P(t')$ be the present value of the profits that the firm can expect to earn if it introduces an invention belonging to this particular field of technology at the time t', but carries on its present methods up to that time. Then P(inf.) will denote the present value of the firm's profits when no innovation is undertaken (i.e. when innovation is postponed indefinitely). Furthermore, $t' = t + d$, where d is the time needed for developing the invention concerned, so that we can write $P = P(t + d)$. Our conclusions (2) and (3) imply that this function shifts downwards over the whole of its course.

The use value of this invention for the firm is equal to the present value of the additional profits due to its adoption, which is $P(t + d) - P(\text{inf})$. This use value will be decreased or increased (for a given value of t), according to whether effect (2) outweighs effect (3) or vice versa.

The firm's net gain on developing and introducing this invention (denoted as G) is equal to the difference between its use value and its development costs, that is, $G = P(t + d) - P(\text{inf}) - D(t)$. This net gain will decrease or increase, according to whether effect (2) outweighs effects (1) and (3) taken together.

The firm will refrain from developing and introducing inventions in the field concerned if this net gain has become negative for all values of t. If this is not the case, the firm will choose that value of t which maximizes its net gain. It will await the competitor's results if the saving in the development costs of related inventions is greater than the loss in its profits owing to the postponement of the innovation. In particular, small firms do often find it profitable to leave original research to their larger competitors, especially in industries in which original research tends to be very expensive.

Finally, the firm's behaviour will also depend on the availability of alternative possibilities in research and innovation. In industries in which there is an abundance of such possibilities, it tends to be profitable for each firm to specialize in a particular part of the field, in which it may hope to obtain a monopoly position. (This last conclusion, however, depends on the fact that different lines of research and innovation tend to be for the firm, not concurrent possibilities,

13. This may be to some extent offset by external economies resulting from the competitor's innovation.
14. See preceding footnote.

but alternatives among which a choice is necessary, which fact will be discussed in the next section.)

7. Limits to Number of Inventions that can be used

In the case of developing minor inventions the only problem for the firm to decide is whether the estimated value of the results exceeds their estimated development costs or not. This can, roughly speaking, be decided separately for each invention.

In the case of major inventions, however, that entail substantial introduction costs, the position is different. Such inventions are highly competitive goods.[15] The use value of a group of major inventions tends to fall considerably short of the sum of their "separate" use values, i.e. the use value that would apply if the invention concerned were the only one available to the firm. Indeed, after a certain point the firm's demand for major inventions tends to become saturated, so that additional major inventions have no value for it, however high their value would be if the firm had no alternative inventions at its command.

This is so, on the one hand, because, owing to the limitation of the firm's capital resources and to the other well-known factors limiting both the size of the firm and the rate of its growth, after a certain point the firm can adopt new products or production methods only if it is giving up some of its old products and methods. On the other hand, the frequency of replacing old products and production methods by new ones is confined by the capital losses due to the premature scrapping of its old equipment, to the giving up of the goodwill attached to its old products (which is usually the result of a good deal of advertising expenditure) and to the disturbing of its routine operations in the transitional period. On the average, the replacement periods of the main items of the firm's equipment cannot be reduced in practice much below the latter's physical lifetime (say, by more than 50%).

To be sure, unexpected large advances in technology may occasionally induce the firm to accelerate substantially the replacement of its equipment. But this effect tends to be on the average largely offset by the fact that the prospect of further advances in the relevant fields tends to make the firm postpone replacement and await further developments.[16]

On the other hand, it is true not only that the number of major

Complementarity is also quite common within a group of related inventions, but, regarding the whole set of the inventions adopted by a firm, competitiveness tends to be the dominant relationship.

16. An industry can afford over a significant period of time to shorten its replacement periods so much as to lose a greater part of the useful life of its equipment only if it is able to pass over the resulting losses to its customers—which it can do only if these customers have a strong preference for goods produced by the most up-to-date equipment and are ready to pay a materially higher price for these. In the absence of this, even a high rate of technical progress in the equipment available cannot justify a substantial shortening of the replacement periods as a permanent policy.

inventions adopted by the firm cannot much exceed the limit defined by the length of the normal replacement periods, but it is true also that this number cannot fall much below this limit (for an efficient firm), because it tends to be profitable to connect each time the replacement of equipment with adopting a new invention.

All in all, the number of the fairly independent production processes (or fairly independent items of equipment) operated by the firm, divided by the average lifetime of its equipment, tends to furnish an approximate estimate for the number of major inventions that the firm can use per unit of time.[17]

The number of new research projects undertaken must be fixed by the firm so as to provide as far as possible for an adequate supply of fully developed new inventions for each future period of time, due allowances being made for failures, and account being taken of the estimated time of completion of each research project. Actually, owing to the uncertainty of such estimates it is desirable to plan for a safety margin and to start a sufficiently larger number of new projects.[18] Moreover, an expected increase in the size of the firm over time justifies an additional increase in the rate of long-term research work.

8. *Factors Limiting Research Expenditure*

To conclude, we propose to sum up the factors limiting the research expenditure of the firm.

We have seen that specialization of the firm's producing, marketing and research facilities tends to confine the firm's research activities to a rather narrow field (Section 5). The fact that some part of this field are already covered by the research activities of the firm's competitors may mean a further restriction (Section 6).

Within this special field an increase of the volume of the firm's research activities beyond a certain point would meet decreasing "physical" returns, because the number of promising industrial research opportunities available in this special field is limited in the short run (Section 4). (In the long run, an increase in the rate of fundamental research may raise the number of worth-while potential industrial research projects perhaps indefinitely. But fundamental research can be profitably undertaken only to a limited extent by private firms owing to its riskiness and to its long gestation period.)[19]

17. Of course, it may be possible to apply several new inventions to the same piece of equipment when it is renewed. But this conglomeration of inventions has its obvious limits.

18. In general, the uncertainty of predicting the future course of a research project tends to discourage research. But in this connection this uncertainty tends rather to increase the volume of research activities.

19. In theory, the ultimate limitation on the total volume of research in the community is the scarcity of capital. In practice, this scarcity of capital is responsible mainly for limiting the volume of long-term fundamental research. The volume of industrial research is checked by other factors before it hits against the wall of the scarcity of capital.

Actually, a business firm cannot profitably develop even this limited number of promising research opportunities available in its own special field, because the prohibitive costs of replacing its equipment too frequently further restrict the number of major inventions that it can use in each period of time (Section 7).

A large number of firms fail to utilize even these limited profitable research possibilities through sheer inefficiency. The efficiency of firms in making use of these opportunities shows great variations from industry to industry and from country to country, which variations do not have any economic justification whatever, but are the result of cultural and social rather than economic forces.

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ECONOMIC DEVELOPMENT IN UNDER-DEVELOPED AREAS

1

The literature on economic development has been recently enriched by the addition of two interesting books by Professors Ragnar Nurkse and S. H. Frankel.[1] Frankel's book brings together in a very convenient form a number of articles which have appeared from time to time in various well-known journals and other publications. Although parts of Nurkse's book have also previously appeared in limited circulations this is the first publication of his views that has been widely available to the general economist. It comprises a revision and extension of his lectures delivered first in Rio de Janeiro in 1951 under the auspices of the Brazilian Institute of Economics, and then in Cairo in 1952 as part of a lecture programme of the National Bank of Egypt. Accordingly it presents a more mature expression of Nurkse's thoughts on various aspects of economic development.

Although the books provide excellent contrasts in methods of analysis, outlook and style, in many ways they complement each other. It is refreshing to find an economist querying the importance, role and aims of economic development in under-developed countries with as much vigour as Frankel. A large amount of sympathy will, understandably, be felt towards many of the points of view he expresses, particularly his strictures regarding the rate at which modern technological methods can be introduced into countries which though economically under-developed possess long and high traditions of social and religious customs; nevertheless he seems to be unnecessarily critical of many of the tools and methods of analysis employed by economists in an attempt to throw more light on problems of development and one cannot help wishing for a little more guidance. Nurkse on the other hand is revealingly naive regarding the political and social problems to be overcome and sticks closely to his economic last. It is, however, remarkable how many of the problems raised by Frankel find at least a partial answer in Nurkse, and though not always answered in a perfectly satisfactory manner at least two sides of many problems are exposed. For this reason anyone interested in the economic development of under-developed areas would be well repaid by a reading of both these works.

1. Ragnar Nurkse, *Problems of Capital Formation in Under-developed Countries.* (Basil Blackwell, Oxford, 1953.) Pp. 157. 15/- stg.
S. Herbert Frankel, *The Economic Impact on Under-developed Societies.* (Basil Blackwell, Oxford, 1953.) Pp. 179. 15/- stg.

While the definition of an under-developed country has led to many lengthy discussions among economists, it proved remarkably easy for Nurkse. He defines them in a footnote to cover the group of countries which possess a relatively low per capita income. This is a reasonably convenient and acceptable definition for most economists except Frankel,[2] who has considerable misgivings regarding the inter-comparability of national income estimates. National income comparisons among countries which possess widely differing production and consumption patterns cannot be made with any pretence to precision, and Frankel's misgivings in this direction can be readily appreciated. Nevertheless the comparisons are not entirely without meaning, and crude as they might be, they can be of great service provided their limitations are fully understood. It is the failure of many economists to understand these limitations rather than their actual existence that leads to much of the confusion arising from national income comparisons.

In a brief analysis of the forces tending to perpetuate the "vicious circle of poverty" common to most of the low income or under-developed countries, Nurkse points out that the low level of real income, reflecting a low level of productivity, affects both the supply of and the demand for capital. The small amount of capital is determined on the demand side by low consumption and on the supply side by a low level of saving. Demonstration of the circular nature of the problem indicates there is more than one position at which the circle can be broken. For example, many suggestions have been recently forthcoming regarding the advisability of helping and even starting the process of economic development by improvements in productivity. Productivity can at times be raised through simple changes in the methods of production. However, it is more usually raised through the use of more capitalistic methods of production, although the methods may not always be capital intensive. In order to concentrate on the immediate factors affecting capital accumulation Nurkse tends to break the circuit by placing his emphasis on consumption as the starting point so that, following Schumpeter, increases in productivity are introduced through innovations.

Just how large a canvas to use is always a difficult decision for an economist, particularly when it comes to the economic development of under-developed countries. In order to obtain a comparable view of the economic process through which advanced economies have passed since their emergence from situations similar to those existing in under-developed countries to-day, a period of several hundred years has to be examined. During this period the developed countries

2. Except also Jacob Viner; see his *International Trade and Economic Development* (O.U.P., 1953). It is a pity Viner did not distinguish between *under-developed* countries on the one hand and *developing* ones on the other. The latter would include advanced economies.

have passed from agricultural economies with almost no capital formation to countries which are predominantly industrialized and possess large accumulations of capital. This immediately raises the problem of the relative places of agriculture and industry in the process of development. However, the very important factor of population growth has intervened during these hundreds of years to produce varieties of complicating patterns which must be included in the overall painting. It seems wise, therefore, to recognize the problem at this stage but, like Nurkse, to defer it till a better understanding of other problems has been obtained.

It is accordingly worthwhile considering a slight generalization of Nurkse's approach which might provide a clearer view of the roles of consumption, investment and productivity in the expansionary process. In doing so a model using only an acceleration relationship and a consumption function of the Duesenberry-Modigliani[3] type will be employed. At the bottom of a depression we have a situation where stocks are low and fixed capital needs replacement. Activity in either direction is bound to be supported by activity in the other, and the resulting process causes the general level of production to grow at a rapid rate.[4] This upward movement takes place with consumption rising along the short period consumption function until the previous peak of income is reached. At this point the consumption function starts to drift upwards with autonomous rises in consumption induced by an improving standard of living together with the influence of the Duesenberry "demonstration effect".

In actual fact it seems most unlikely that consumption would follow precisely along the short period path of the consumption function but, with the free play of expectations it would start to drift upwards before income had risen to its previous highest peak. Thus there would be a rising marginal propensity to consume in the short period, gradually merging into an even higher long period one.

The recovery is bound to go past the previous peak of income owing to the influence of new investment and the growth of population. The introduction of new inventions and new methods of production together with the growth of population will also raise the full employment output ceiling so that the previous peak of income will now be well below it. Thus after passing the previous income peak the economy will still have plenty of room for expansion

3. See J. S. Duesenberry, *Income, Saving and the Theory of Consumer Behaviour*, Harvard University Press, 1949.

4. There seems to be fairly general agreement, though with only very slender statistical support, that for developed countries the ratio of national income to national wealth is of the order of 1 : 3 or 1 : 4. If the length of the production period were taken to be a year this would imply an acceleration coefficient of 3 or 4. If the period were less than a year the accelerator would be higher. In either case the resulting series would be an explosive or an anti-damped cyclical one. Over the long period of development, however, the accelerator has undoubtedly increased in size and accordingly affected the intensity of cyclical fluctuations.

until it comes to an end either through contact with the ceiling or because the rate of expansion declines and leads to cumulative falls in investment.

At this stage the accelerator becomes transformed and gross investment falls slowly towards zero. The decline in consumption however does not take place along the upward path but instead falls with its sights fixed on the new highest standard of living achieved. This means that consumption out of a given level of income is higher than during the previous slump so that the level of production at the bottom of the new depression is higher than at the bottom of the previous depression. This process is rather like the man who, in the process of climbing a wall, slips back one foot for every two he climbs but nevertheless climbs the wall at a steady overall rate.[5]

Here we can see an analytical framework to Schumpeter's descriptive examination of the impact of trade cycles on the process of development. Although there is a sense in which the trade cycle can be said to provide the conditions under which the necessary impetus is given to the application of new inventions, nevertheless it does not follow that development can only take place if cyclical fluctuations occur. The trend and the cycle are joint products of the same set of fundamental economic factors. These are the growth of investment, improvement in techniques, expansion of population and responsiveness of consumption. Furthermore the addition to productive capacity made by new investment can only be utilized in the long run provided consumption expands at a sufficiently fast rate.[6] This condition will be readily satisfied if consumption follows the Duesenberry pattern where the consumption function drifts upward in such a way that the long term average propensity to consume is greater than the short term (or cyclical) marginal propensity to consume.

2

There are many points of similarity between the conditions existing more or less permanently in under-developed areas and the conditions which exist temporarily at the bottom of a depression in developed countries. In fact, one of the greatest difficulties of a theory of the trade cycle is to explain how the economy rises out of a period of depression. If any single firm should start its expansionary movement too early it is bound to fail. It is only when the effort is echoed by other firms that a general process of expansion and recovery gets under way.

5. Since writing the above an article by R. M. Goodwin in the *Yorkshire Bulletin* of August, 1953, has been brought to my notice. Goodwin also employs the Duesenberry consumption function to explain the trade cycle but comes to similar though not identical conclusions in regard to the trend factor.

6. See E. Domar, "Expansion and Employment", *American Economic Review*, March 1947, and R. F. Harrod, *Towards a Dynamic Economics* (Macmillan, London, 1948).

In the same way it is of little use starting a single factory in an under-developed country. The workers in this factory will not spend all their incomes on its product, and those who do not work there have insufficient income to buy the balance of its output. The method suggested by Nurkse for breaking this deadlock is the idea of "balanced growth".[7] This enables the lack of demand for any single commodity to be overcome by insuring the simultaneous production of a number of commodities which complement each other from the point of view of consumer demand.

While this theory appears a little unorthodox when it is encountered as a solution for breaking the deadlock in under-developed countries, it is after all merely the forced operation of a process which occurs voluntarily in developed countries undergoing recovery from a depression. The essential differences between the two situations are both mental and physical. In the case of developed countries a short period of depression leaves everyone waiting for and desiring the opportunity to leap on the band-waggon of recovery, whereas in the case of the under-developed countries the long period in the wilderness has effectively eliminated the prospect of arousing any similar feelings. Considerable differences on the physical side are apparent in the directions of the availability of skilled labour and the supply of capital, but it should not be forgotten that in many ways the supply of these factors is also partly due to a difference in mental approach.

The process of ensuring a "balanced growth" in under-developed countries provides some very difficult problems. First, how is the selection of the appropriate economic activities to encourage and develop to be made, and second, who is to organize and operate these activities? It is a pity Nurkse did not attempt to provide an answer to these problems as they contain the key to the practical side of economic development. The first question cannot, of course, be answered satisfactorily without a knowledge of the resources available in a particular area, but there seems no reason why the principle of "balanced growth" should come into conflict with that of comparative advantage. The second question is a double-barrelled one. The indigenous populations of under-developed countries contain few people who are able and prepared to assume the responsibilities of entrepreneurial activities. The inhabitants of these countries are in general either peasants or traders. But even if entrepreneurs were available it would still be necessary to ensure that financial aid was forthcoming.

That state assistance in various forms should take place is not very surprising to an Australian. In fact Nurkse quotes with evident

7. Similar ideas are expressed in P. N. Rosentein-Rodan, "Problems of Industrialization of Eastern and South-eastern Europe", *Economic Journal*, June 1943; and K. Mandelbaum, *The Industrialization of Backward Areas* (Basil Blackwood, Oxford, 1945).

approval the part played by government in Australia's development. Nevertheless the task of development in most under-developed areas is so enormous that everything possible should be done to ensure that no avenue of enterprise is closed. Thus the State should be prepared to engage in enterprise and also to provide assistance both direct and indirect to private enterprise. One way of attracting foreign firms to start operations is of course by tariffs and import controls, but it should be remembered that there must appear to be good business prospects, if not in the immediate period at least within a reasonable period of time. Australia seems to have been particularly successful with these methods. However, exchange controls and the risk of nationalization are bogeys which unless removed will be powerful deterrents to foreign capital.

The introduction of a system of education and training is vitally necessary for the provision of a supply of relatively skilled operatives. However, it does far more than this. It opens up new worlds and stimulates the people being trained to appreciate and desire a higher degree of material comfort and consequently to raise the level of demand at the same time as the supply of labour is increased. Accordingly, the various facets of a development plan require careful co-ordination since frustrations may well become an increasing problem if education precedes the expansion of production by too great a gap. There are also other ways in which demand may be stimulated. The most important of these is that outlined by Nurkse under an international analogy with the Duesenberry "demonstration effect". Nurkse appears rather afraid of this force and it is accordingly worthwhile repeating his argument briefly.

The starting point is the interdependence of consumers' preferences. Each person's consumption habits are not independent of those of the rest of the community. It is impossible for people to live in isolation within any community, and the frequent contact which a person makes with goods which are superior to those which he habitually uses is bound to lead to dissatisfaction and desire for the better article. This contact comes about in many ways. The simplest way it may be experienced is when visiting friends or neighbours. Through the various "demonstration effects" the consumption pattern set by the higher income groups seeps down to the lower ones and leads to a desire for better goods and the desire for a higher standard of living. By this process a continuous self-generating growth may take place in consumption.

Nurkse suggests that this type of argument may affect human behaviour on the international as well as the inter-personal level. This is brought about by the continual demonstration of the consumption patterns of the inhabitants of countries possessing high

real incomes through the media of films, magazines, newspapers, radios and personal contact. The opening up of new fields of desires among the inhabitants of low income countries is for Nurkse a great handicap as it lowers the propensity to save and accordingly limits the growth of capital. Furthermore, insofar as the demonstration effect leads to an increased demand for imports it has adverse effects on the balance of payments.

It is in this latter field that the argument is most convincing. The dollar shortage can be partly explained by some such process, but here the demonstration effect would seem to apply more to the medium and relatively high income countries than to the low income countries characterized by Asia and large parts of Africa. In these countries it is doubtful whether the demonstration effect has so far had very much effect on consumption desires. Even in countries like Australia and the United Kingdom it is surprising to find so much ignorance about American living standards and indeed, on balance, American films and magazines do not seem to have had any great effect on the "material" desires of the people of these countries compared with the reactions to products seen locally. Furthermore, it seems rather doubtful whether the Asian peasant really understands the significance of much that he sees on films or in magazines.

But even if Nurkse's arguments were true, it is not something to be afraid of. Unless the inhabitants of under-developed areas want a higher material standard of living almost all the reason for worrying about development ceases. Far from being a bad thing the "demonstration effect" may prove a good thing even if it only produces the effect of making the inhabitants of under-developed countries desire the sort of goods which are produced in advanced western countries. In fact, if no such effect is present it may have to be created in order to ensure a demand for the output which will eventually be forthcoming from the process of capital formation. It should not be forgotten that consumption is the main economic motive underlying the actions of the majority of people and in order to persuade the inhabitants of under-developed countries to undergo training and in some cases to work harder it may be necessary to ensure this motive is strengthened.

However, it is here that Frankel's remonstrations regarding the direction of development become most important. In order to facilitate the process of development it may be preferable that it should take place in a direction which fits in with the religious and social structures which are traditional in the under-developed country. It is up to the highly educated sections of the inhabitants of under-developed countries to apply themselves to the task of modifying, adapting and redesigning western methods and commodities to suit

these local conditions. The mere copying of western methods of production should not be encouraged unnecessarily, as these methods have been designed to produce goods for very different social structures.

Admittedly a high level of consumption limits the volume of saving that will be undertaken, but in the case of most under-developed countries real income is already so low that this problem is present anyway. It is only after real incomes have been lifted a little that the encouragement of demand starts to have a reducing influence on saving, but it is just at this stage that reasons for lifting real incomes still higher become most important and the impetus to development given by consumption desires are needed most. An increasing level of consumption is needed both to energize investment activity and to ensure a continual pressure on the labour market. A reduction in unemployment is, after all, one of the main aims of development, and if this aim is not to be thwarted by depressions a constant pressure of aggregate demand is essential. Further, it is only after the process has really started that fiscal and monetary policies may be effectively used to prevent consumption expanding at too fast a rate.

3

The difficulties of providing an internal source for the finance of capital formation always make it easy to seek a solution to this problem in international assistance of some sort either by gifts or loans. There is clearly a lot to be said for this approach. Since the developed countries of North America and Western Europe roughly earn 80 per cent. of the world's income (excluding the U.S.S.R.),[8] it follows that 1 per cent. of their output transferred to the under-developed countries (excluding south-eastern Europe) would provide an addition of around 4 per cent. to the incomes of those countries. Granting the difficulty of comparing these incomes, this is still a significant result and would provide the basis for considerable capital accumulation by under-developed countries.

Even if the political difficulties associated with such transfers are overcome there still remains the question of whether they provide satisfactory relief to the capital shortage in under-developed countries. Nurkse is concerned that it may prove too easy to increase internal consumption by substituting foreign funds for domestic saving. This would result in no real capital accumulation, and so do nothing to improve the state of development. This could also happen even if the foreign funds were earmarked for specific projects. If, of course, the "demonstration effect" turns out to be as important as Nurkse

8. These calculations were based on figures in *National Income and its Distribution in Under-developed Countries*, United Nations Statistical Paper, Series E, No. 3, 1951.

supposes this becomes a difficult problem, but apart from the intrinsic political difficulties there seems little reason to be pessimistic regarding the effectiveness of such a world measure. Even if the transfer were reduced to one half of one per cent. of the income of developed countries it would still provide a very considerable measure of aid towards the problem of capital accumulation in under-developed countries. Any difficulties that arose would more likely be on the side of the capacity of under-developed countries to absorb such aid.

Although foreign funds can provide considerable assistance to the process of accumulating capital, in the longer run there is no way of avoiding the application of internal resources to this process. The ability to do this will differ from country to country depending upon the level of real income, material resources, and the ability to save and be taxed. Nevertheless, Nurkse demonstrates how the countries possessing an excess population may use it as an effective source of both saving and capital formation.[9]

An excess population arises when the population actually existing on the land is greater than the number of workers required to produce the same output without any change in methods. This surplus population is more commonly known as "disguised unemployment" and exists mainly because of family employment and support in peasant communities. Nurkse suggests the disguised unemployed should be drawn off the land and put to work on simple capital projects such as irrigation works, roads, etc. In this way the production of consumption goods per head remains constant while total output of all goods and services per head increases by the amount of capital construction. This capital formation can be financed by utilizing the potential saving which exists when the "productive" labourers are supporting their "unproductive" brethren. It is done by ensuring that workers who remain in the agricultural sector continue to produce at least the previous level of output and maintain their previous level of per capita consumption. Accordingly, the surplus which was previously consumed by the disguised unemployed is still available for them while working on the capital projects.

As Nurkse remarks, this sort of process stands midway between a full employment and an under-employment situation in an industrialized country. Under full employment investment can only be increased if consumption is reduced. In a situation of unemployment the presence of a large capital stock and some excess capacity allows the production of both consumption goods and capital goods to be expanded. In the case just outlined aggregate consumption is held constant while investment is expanded, a situation which is analogous to the balanced budget theorem.

9. In doing so, he supplies an answer to the difficulty experienced by Frankel (see pp. 87-88) in understanding the effect on the national product if the surplus population was removed from the land.

This is certainly an excellent suggestion for expanding output and capital formation without reducing consumption, but the question of its practicability immediately presents itself. Nurkse realizes it will only be successful if an increase in the consumption of agricultural workers can be prevented in the early stages. This will, of course, be a singularly difficult task. Peasants are notoriously difficult to tax, and they are not likely to give up readily their "surplus" production as a form of voluntary saving. Two further factors are likely to make the practical implementation of the scheme even more difficult. First, the process of moving people in under-developed countries is not likely to be a very fast one. Any expectations of quick results from such schemes should be heavily discounted. Second, if the rate of growth of population is at all high this will not only make the process even slower, but will make it more difficult to prevent the consumption of the agricultural families from rising.

In the process of economic development time is the great enemy, and the "vicious circle of poverty" is not easily cast off. If anything successful is to be achieved from Nurkse's plan it will be necessary to put far more effort into increasing agricultural output than he thinks is needed. Some assistance may be automatically provided through land reform, the reorganization of farms, and by concentrating some of the capital projects on schemes such as irrigation which will directly assist farming. Nevertheless it will still be necessary to ensure that improved farming techniques are vigorously applied.

One important factor has, however, been omitted from the discussion so far. This is the provision of tools, equipment and even temporary housing for the investment workers. Here Nurkse points out very rightly that this equipment should be of a very simple type. Densely populated countries should not use tools needing the same degree of capital intensity as advanced countries. It is a pity, however, this point was not pushed a little further, as it applies to the agricultural sector of densely populated countries as well as to all capital formation in sparsely populated countries. Frankel's account of the failure of the East African ground nut scheme provides an excellent illustration of the point.

It is important to remember that capital is only accumulated for the purpose of increasing production. The more roundabout and capital intensive that investment is, the slower the rate of increase of output. Capital with a low capital-output ratio will therefore increase the rate of development. Furthermore, the workers in under-developed countries are not capable of using complicated modern equipment. In this connection there are large gains to be made by the devotion of a considerable amount of time and thought to the simplification of modern equipment in order to meet the require-

ments of under-developed countries. In the longer period there will be further gains as the transition from the simpler to the more complicated technology is undertaken.

With careful planning under-developed countries are accordingly in a position to reduce wasteful investment to a minimum, but it must not be thought that all waste can be eliminated. Frankel is constantly disturbed by the fact that investment in railways, ports, roads, etc., has frequently been wrongly placed in under-developed countries. As a result it is not investment at all. On the other hand he feels that these things did not happen in Europe in the eighteenth and nineteenth centuries. This is an extremely doubtful proposition. It would be interesting to know just how much of the capital formation in the United Kingdom and Europe during this period proved to be wasteful in the sense that it was grandiose or impracticable (though often showing vision), and did not add to the immediate productive capacity.[10] Moreover, while it may be the impression that a certain road or port has temporarily turned out a failure this is not a static world, and the discovery and exploitation of new resources may change the situation overnight.

4

The decision as to whether agricultural or industrial development should be pursued is necessarily bound up with the problem of the size of the population and the natural resources available. In the case of sparsely populated countries there can be no argument against Nurkse's proposition that "an increase in agricultural productivity must have priority over everything else",[11] but it is difficult to reconcile the statement with the view expressed some lines further on that "the rise in agricultural productivity though logically of prior urgency is not necessarily prior in time".[12] It is Nurkse's use of static rather than dynamic analysis that allows him to forget the real influence of time. If agricultural productivity can be raised by the application of new techniques the resulting rise in income will gradually encourage and permit the use of capital formation with a low capital-output ratio. It is only at this stage, which may take a considerable period of time, that further increases in real income will enable the application of more capital intensive investment and so release labour for absorption in other economic activities. Lack of education and an unwillingness to work for a higher standard of living are factors which will keep the rate of advance to low levels.

Although Nurkse follows the United Nations experts[13] in advocating

10. The history of that famous ship the *Great Eastern* throws immediate light on this topic. See James Dugan, *The Great Iron Ship*, H. Hamilton, London, 1953.
11. See Nurkse, op. cit., p. 52.
12. See Nurkse, op. cit., p. 53.
13. *See Measures for the Economic Development of Under-developed Countries* (United Nations, New York, 1951).

industrialization for countries with an excess population, he at least demonstrates how this can be attempted. Any work undertaken by the disguised rural unemployed adds to the national product and should be encouraged by all possible means. Employment should, of course, always be directed towards the industries in which there is the greatest relative gain, and if necessary supported by fiscal means. Again, however, if time were not the enemy Nurkse would be perfectly correct, but as outlined above, the process of transferring labour from the land to industry and providing simple equipment is a time consuming one and so gives the growth of population the chance to make itself an effective hindrance.

It is a pity that Nurkse would not allow himself to be diverted into analysing the effects of population growth under conditions of disguised unemployment. Improved health conditions and the growth of medical knowledge are likely to have most effect on population expansion through a lowering of the death rates of children. In these circumstances there are more mouths to feed with no increase in the labour force, and despite the first hopes that the "circle" might have been pried open, it is likely to recoil and snap shut. In order to prevent this, agricultural improvements and industrialization must be given equal roles during the initial stages of the development in densely populated countries. Industrialization will assume increasing importance from the point of view of employment as development proceeds, and will also enable more capital intensive methods to be introduced into the agricultural sector.

In writing his book Nurkse goes a long way towards providing a much needed supplement to the United Nations experts' report on under-developed countries. Although he specifically set out to examine the problem of capital formation he was necessarily drawn into many associated fields. His many interesting and novel comments have the effect of making one think again about many things which had been taken for granted. One of the greatest omissions is the neglect of education and the place of technical assistance in economic development, but if the educators are wise they in their turn should not neglect Nurkse's book, but see that large parts are absorbed and understood in under-developed countries. Although a republication of various articles, Frankel's book, if it is made a constant source of reference, will serve the very important use of preventing too many economic flights of fancy.

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COLONIAL MONEY AND BANKING DURING THE INDUSTRIAL REVOLUTION[1]

1. Introduction

S. J. Butlin, Professor of Economics at the University of Sydney, has written in his *Foundations of the Australian Monetary System* the most important study on any aspect of the early economic history of Australia.[2] His book is, indeed, a monograph, for Professor Butlin's attention is focussed, like a flashlight, on money and banking, and only indirectly throws general illumination on the growth of the Australian economy. Since Australia is desperately short of specialist studies, this pioneer volume is a notable achievement of scholarly inquiry, whose magnitude and complexity can only be judged by the careful reading of the book itself. But prospective non-specialist readers should not be alarmed by the subject-matter—even remembering Walter Leaf's maxim that "there are three main causes that dispose men to madness: love, ambition, and the study of currency problems" . . . nor by the size of the book and its specific gravity.[3] Much of the book is *not* easy reading, but much is exciting, all is interesting, and none is so technical that the intelligent general reader cannot follow. Moreover, Professor Butlin writes clearly and simply, and with an occasional touch of humour,[4] so that the difficulties of subject matter are often eased by the presentation. This book can and should be read by all who are interested in the early history of Australia.

Professor Butlin is a pioneer not only in subject matter, but also in his methods of inquiry and presentation. His method is that of "rigorous documentation": in presentation, it requires the accurate referencing of all statements of fact in the text by footnotes; in inquiry, it requires the systematic combing of the primary sources for the facts. In presentation, Professor Butlin is a perfectionist—an understandable reaction against the methods of Coghlan, Shann and Fitzpatrick—and the result is impressive; hardly a fact in the book is not referenced, often from a variety of sources.[5] He is not,

1. Review of S. J. Butlin, *Foundations of the Australian Monetary System, 1788-1851* (Melbourne University Press, 1953). Pp. xvi + 727. Price, 57/6 Australian.

2. The books that invite comparison are S. H. Roberts' *History of Australian Land Settlement* (Melbourne, 1924), and R. B. Madgwick's *Immigration into Eastern Australia, 1788-1851* (London, 1937). The excellent books of Eris O'Brien and R. C. Mills are not economic histories in the sense understood in this review.

3. It weighs 2 lb. 2 oz. and contains 743 pages (including 554 pages of text, 132 of statistical appendix, 19 of bibliography), 30 illustrations (mostly of early paper money), and one map (in which, in spite of Professor Butlin's usual accuracy in detail, Newcastle is missing and Muswellbrook incorrectly spelled).

4. Thus, e.g., Professor Butlin writes (p. 19) that it is "incredible that rum should have been used quite so widely when other means of payment were available, less potable but more portable, less liquid but more convertible".

5. For those interested in such statistics, there are 2,824 footnotes in the text (as well as many more in the appendix), with an average of 188 per chapter.

of course, the first Australian historian to document, but never before in publication has the method been so amply demonstrated in its strength and weakness. Its strength, particularly in the early stages of research in any field, is to lay bare the sources, to instill lessons of diligence and accuracy (diligence in finding the sources, accuracy in presenting the facts discovered), and to discourage facile generalization. Its weakness is a tendency to treat all sources and all facts as of equal importance, to encourage description rather than analysis, to discourage all speculation, and, in presentation, to clog the narrative with footnotes. But, in spite of the dangers, Australian history now needs a large dose of "rigorous documentation", of hard work with the sources and careful scholarship, rather than new general books on the same thin base of old general books and a few specialist studies. The main work in Australian history, which remains yet to be done, can only be done by the kind of research that has gone into Professor Butlin's book. But he is, to some extent, a victim of his method, so that an antiquarian flavour creeps occasionally into the narrative, when, for example, an unimportant sidelight of the formation of an unimportant bank is detailed with copious references. More surprising, however, is the relatively small use that Professor Butlin makes of economic theory: with the notable exceptions of the chapters on *The Foreign Exchange Market* and *Banking Practice and Policy*, he is generally content with narration and description. (There is, for example, no discussion of the general functions of banking, nor of the formal organization and structure of the colonial banks.) Since Professor Butlin is an economist by training and profession, I can only conclude that his bent for theory has been inhibited by his method.

Three excellent by-products of Professor Butlin's belief in method are the index, bibliography, and statistical appendix. The index is what an index should be and rarely is, an analytical tool. So also is the bibliography, which is a model worth emulating, the various sources being grouped generically, and commented on, both in groups and individually. The only obvious omissions I can find are: J. Deroux (*Les Banques Australiennes*, Paris, 1914) and E. Brett ("The History and Development of Banking in Australia" in *The Journal of the Institute of Bankers*, 1883), and, more surprising, M. H. Ellis (*Lachlan Macquarie*, Sydney, 1947) and *The Bankers' Magazine* (which, from the forties on, published numerous articles on colonial banking). But, good as is the bibliography, Professor Butlin's generalizations about particular authors are irritating. Indeed, he seems to delight in humbling his predecessors, either in the bibliography or the text: Chalmers is "very imperfect"; Mackay is "inadequate or extremely inaccurate"; Coghlan, Shann, Lang and Evatt are all severely drubbed; the majority of contemporary books

are "uninformative, incomplete, or unreliable"; Westgarth's excellent books are dismissed because they were written "to beguile the tedium of the long voyage to England" and presumably without "much reference material". (As well condemn Pirenne's famous *History of Europe* because it was written during World War I while the author was a political prisoner in Germany, away from libraries, friends, and family!) Indeed, the only two authors Professor Butlin seems to like are S. H. Roberts and B. Fitzpatrick.[6] Fitzpatrick is even elevated above Coghlan as an economic historian! But such judgements do not detract from the value of a bibliography as a true guide to the sources of Australian monetary history. Similarly, the Statistical Appendix (of 94 tables of bank figures) is one of the most valuable sections of the book. The tables, arranged by State, contain the asset and liability figures of the various banks, together with tables of paid-up capital, reserves, dividends, interest and exchange rates, and bank ratios (cash to deposits and notes, and advances to deposits). The task of collecting such a remarkable collection of figures must have been immense, and the tables will undoubtedly be of great benefit to all future writers on the economic history of Australia.

Professor Butlin's book is arranged, in the main, chronologically. Chapters 2 to 6 tell the currency story, from its primitive beginnings to the establishment of sterling in the twenties; and chapters 7 to 10 are concerned with the history of banks and the trade cycle. The remaining chapters cut across this chronological development; chapter 11 is on Western Australia; chapter 12 is an excellent account of Savings Banks; chapter 13, perhaps the best in the book, concerns the foreign exchange market; and the last two chapters are general accounts of banking policy and practice, and government policy and legislation.

2. Currency and Sterling

The Lords of the British Treasury, in a minute dated 11 February 1825, wrote that "they consider it as being highly expedient that they should avail themselves of the present period of peace, and of the means which appear to be now at their disposal, for introducing a fixed and uniform medium of exchange for all transactions connected with the public service, in the place of the various, fluctuating, and anomalous currencies which have been created under the pressure of temporary emergency, or with views of local and peculiar expediency, in many of the Colonies and Possessions during the war, and which have been productive of much private and public incon-

6. Professor Butlin often corrects Fitzpatrick in the text, but both in the Preface and Bibliography he praises him highly as having written "the most substantial economic history of Australia yet available". It depends, I suppose, on what "substantial" means, but it seems to me that both in weight and substance Coghlan's four volumes are superior to Fitzpatrick's two, and must still be regarded as the best economic history of Australia.

venience". They proposed a sterling exchange standard for the colonies, with British silver and copper coins convertible into "the standard gold currency of the United Kingdom, by means of bills of exchange".[7] There was, indeed, at this period a confusion of currency within the Empire, a variety of coins (with a predominance of the ubiquitous Spanish dollar, a standard world coin for centuries) and a greater variety of paper money.[8] The attempt at regularization met with fair success, although the attempt to make sterling coins the circulating medium was not, in all cases, successful.

The most persistent problem in all colonies (with the possible exception of India) was the chronic shortage of circulating medium, due, first, to the usually unfavourable trade balances which necessitated the export of specie, and, second, to the lack of good paper money (there being few banks with acceptable notes for internal circulation). The problem was aggravated in this period by the general economic growth that came with the Industrial Revolution, with increased population, production and trade, and the consequent increased need for money. The colonial expedients were to barter, to use commodities as coinage, and to use colonial coins and paper money. But barter, though used extensively even into the nineteenth century, was increasingly inconvenient. Similarly the use of commodity money was not popular, though in eighteenth century America, for example, a variety of commodities circulated as money—tobacco in Virginia, and a dozen or more commodities in North Carolina. Generally, therefore, paper money and colonial coinage, both public and private, filled the gap; for example, the card-money of Canada, the paper rix-dollar of South Africa, and the variety of official coins and paper of the American colonies. But such money always circulated at a discount with sterling, and the bad drove out the good. This, of course, is an old observed phenomenon, as true of seventeenth century Amsterdam (where clipped coins forced full weight coins out of circulation) as of late eighteenth century India (where the early bank notes caused the disappearance of circulating gold), and of nineteenth century New South Wales. The result was perpetual financial crisis, a constant drainage of specie, a continual tendency towards deflation.

Professor Butlin, though he takes little account of the imperial context, relates graphically the monetary problems of Australia and the methods used to overcome them. Originally the colony's money consisted of some coin (mainly copper), and barter was used in much exchange. The immediate problem was to provide a local

7. R. Chalmers, *A History of Currency in the British Colonies* (London, 1893), pp. 417-18.
8. The variety can be judged from the lists in Chalmers (op. cit.), and in R. M. Martin, *History of the Colonies of the British Empire* (London, 1843). India, for example, had almost indescribable variety, and it was not until 1835 that a uniform silver rupee was declared the standard coin for British India.

currency, for external trade was initially completely financed by government. Private promissory notes soon appeared, and, more important, a variety of official paper money. The government issues consisted mainly of Commissary store receipts (for goods purchased by government from the colonists) and Paymaster's bills (for wages, etc.), both of which were issued in varying amount and were transferable and convertible into bills on the British Treasury.[9] (The system, obviously, was akin to the gold exchange standard.) For a long time the government dominated the money market, and, as the chief consumer in the colony,[10] provided the stimulus for economic growth. It is interesting to note, also, that the Commissariat, by *lending* provisions and stock to settlers, along with its other monetary activities, really constituted Australia's first bank.

Currency changed with the economy. Gradually the colony's coin was enriched by a miscellaneous coinage, both British and foreign, and by private notes which had a wide and long circulation and which defied the various attempts at prohibition or limitation. The circulation of this paper reached its height between 1810 and 1820, but it was not displaced in any complete sense until the forties. Even barter was common into the twenties. Money was the unit of account, but payments were acceptable for a long time in almost any colonial produce. Rum is the best-known example of commodity-money in the history of Australia, but as Professor Butlin clearly demonstrates, its use has been greatly exaggerated. The "petty banking", with its paper "currency" circulating at a discount, and the Commissariat issues, nearer to par with "sterling", ceased to completely dominate the internal monetary system only after 1820. By that date more coin had been imported (especially dollars by Macquarie), the Bank of New South Wales had been formed, and the private sector of the economy was expanding rapidly. In foreign exchange, however, the private bill was still rare, and the government monopoly was not really broken until the formation of the Anglo-Australian banks in the late thirties.[11]

The most curious episode in the history of Australian money was the attempt by Brisbane to institute a dollar standard. There had always been dollars in the colony, and large imports in 1822

9. The payment of wages, etc., in store receipts, or paymaster's bills, which could be compounded into sterling, was used also in other colonies. Thus, in Canada as early as the 17th century, playing-cards, cut in four and stamped with the French coat of arms, and covered by drafts on the French Treasury, were used for soldiers' pay. (See B. Nogaro, *A Short Treatise on Money and Monetary Systems*, London, 1949, p. 129.)

10. Professor Butlin notes (p. 58n) that R. Campbell estimated in 1812 that the government still absorbed 60% of the total wheat harvest.

11. The account of the foreign exchange market, from monopoly by the Commissariat to competition, with Commissariat, merchants and banks playing important roles, is one of the most fascinating sections (pp. 467-95) of the book. The Anglo-Australian banks made the difference, but I find it hard to believe that the "outside market" was "of small dimensions" (p. 491) compared with the bank market. The decline of the Commissariat was due to the "vastly increased volume of London Funds" (from British capital imports, and colonial exports) and the cessation of transportation (and consequently of British expenditure in the colony). Would that Professor Butlin had added to his statistics a table of Commissariat expenditure over the whole period!

enabled them to go into general circulation. But the experiment was only partly successful—the unit of account still remained sterling—and the retreat was sounded by the Treasury Instructions of 1825, and the local act of 1826 to promote the circulation of sterling. Gradually the dollars disappeared from circulation, quickly in New South Wales and more slowly in Van Diemen's Land, so that by 1840 few remained in Australia. By 1830, indeed, a sterling-exchange standard had been set up, and was not again seriously threatened. "The story is that of the final firm establishment of the pound Australian" (p. 143).

3. Banking

The story of Australian banking could be told in at least four ways: by itself, as an autonomous system, with reference to the rest of the world only where it was absolutely necessary; as part of the economic history of Australia, stressing the functional character of banking in the economic development of Australia; as part of the history of colonial banking during the Industrial Revolution; as part of the general history of banking. Professor Butlin has specifically limited himself to the first method, being satisfied with an account of the formation and development of Australian banks. "The chief defect of the present narrative," he writes in his Preface, "is that the threads of monetary development are imperfectly woven into the fabric of the growth of the Australian economy." This rather disarms the reviewer, and excuses Professor Butlin; he can hardly be criticized for not doing what he sets out not to do. But I do believe that the immense reading and research that has gone into this book, and the background knowledge which I know Professor Butlin has, both of the economic history of Australia, and of the history and theory of banking (abroad as well as in the antipodes), would have enabled him to make generalizations, comparisons (like Usher's[12] comparisons of medieval and modern banking), and generally to put the Australian story into a fitting context of history and theory.

The historical functions of banking, which Professor Butlin does not discuss, were to provide currency (means of payment) and credit (by linking lender and borrower). Currency made exchange easier, giving greater freedom to buyer and seller, and making economic calculations more rational and exact. Credit, the lending of money, was perhaps even more important, and involved the recruitment of savings and the development of credit facilities (especially negotiable credit instruments). Credit enabled the entrepreneur of ability, but not enough resources, to produce and trade. The banking functions were fulfilled by providing a safe deposit for money, by making

12. A. P. Usher, *Early History of Deposit Banking in Mediterranean Europe* (Harvard, 1943). Could not, for example, Swanston be compared with medieval merchant bankers like the Medicis; see R. de Roover, *The Medici Bank* (New York, 1948).

particular money transfers easy (by cheque, or similar medium), by providing loans to public or private borrowers, and by issuing notes payable in bullion on demand. In examining the development of a particular banking system, however, the historian is interested in the conditions which brought the banks into being, the degree to which they fulfilled the services generally associated with banking, the particular methods by which such services were achieved, the principles on which particular banks were organized, and the powers conferred on banks either by statute or common law, along with the obligations and restrictions, legal and customary, which were placed upon them. The historian is interested, further, in the more general problem of the function of the banks in the particular economy, and the extent to which they aided the development of commerce and industry.

Professor Butlin's chapters on banking are combined with an account of the trade cycle in Australia between 1820 and 1850. As a result, we see the banks operating mainly in times of excitement and not in the normal course of business. Professor Butlin is rather like a doctor—in at the birth, serious illnesses, and death of his patients, but knowing little about their private lives. Thus, for example, most of the information about the Bank of Australia is presented on pp. 195-204 and pp. 345-54, on its formation in 1826, and on its failure in 1843. What happened in between can only be discovered from a number of references scattered elsewhere in the text.[13] But this selection is perhaps inevitable in the nature of the source material, where bank records have disappeared, and only newspapers remain to tell the story. Indeed, on the Derwent and the Bank of New South Wales, where records are fairly complete, Professor Butlin has a much more detailed narrative. And there are, also, some excellent smaller studies tucked away in the text, like that on the advances system on pp. 233-36, which, in addition to the final general chapters, do throw light on banking functions and practice.

The period 1788 to 1851 was one of great banking developments throughout the Empire, under the stimulus of the Industrial Revolution. The pattern, though different in detail, was similar in Canada, India, South Africa, Australia and the smaller colonies. The needs which brought banks into being were also similar—the needs for safe and acceptable currencies, and for credit facilities (long-term to develop export industries, and short-term to finance foreign trade). By the eighteen-fifties there were few areas of Empire without banking facilities, either local or imperial: for example, the Colonial Bank

13. Some idea of the character of the bank, however, can be concluded from references to its capital subscriptions (pp. 306, 497), its clearing methods (p. 207), its mortgage policy (pp. 503-5), its agencies (p. 521), and, most important, its statistics (pp. 593-4).

served the West Indies; at the Cape of Good Hope there were nineteen banks by 1858; at Hong Kong there was a branch of the Oriental Bank, and at least two other banks; at Mauritius, there was also a branch of the Oriental Bank, in addition to two local banks; in Canada there were seven banks in 1823 and twenty-eight by 1867; in India, the three Presidency Banks were well established before 1850; and so on. Most of these banks were formed in the period surveyed by Professor Butlin, and his book would have gained much strength by a comparative study of the origins and functions of empire banking.

The Australian banks (excluding Savings Banks) established before 1850 were founded in two bursts of activity—nine in the period 1817 to 1829 (of which only the Bank of New South Wales now survives) and fourteen between 1834 and 1841 (of which the Commercial Banking Company of Sydney still survives, and the Bank of Australasia and the Union Bank did until the merger of 1951). No important bank was formed in the forties. In all, of thirty-nine banks (excluding twelve Savings Banks) founded before 1850, eight were still in operation in that year, four had been absorbed or merged, four had abandoned banking, seven had failed in the depression of the forties, and sixteen had never proceeded beyond projection. Again, most of these banks were formed in New South Wales and Van Diemen's Land, emphasizing the importance of the latter colony in the economic life of Australia at this time. The causes of those banking booms[14] were different—currency needs dominated the early, and credit needs dominated the later period, while in both, rapid economic development was the basic determinant. In more detail, the proximate causes which called the first Australian banks into being were the following: (1) the lack of sufficient circulating medium of good quality; (2) the lack of credit facilities, long-term to finance pastoral development, and short-term to finance overseas trade; (3) the increasing demand for wool in Great Britain (with its impetus for Australian development) and the increasing population and trade of Australia, which made the problems of currency and credit increasingly acute; (4) the potential profits in this situation, and the existence of entrepreneur-capitalists with the ability and resources to take advantage of the situation; and (5) the desire by government to encourage banking, by granting legal rights, in the hope of promoting economic development.

Four types of bank evolved: Savings Banks, local banks, imperial banks and mortgage banks (of which, however, the Derwent was the only true example). It is with local and imperial banks we are most

14. Professor Butlin does not discuss this phenomenon, but A. L. G. Mackay (*The Australian Banking and Credit System*, London, 1931) has a "cluster" theory of Australian banking, finding similar booms in 1851-58, 1863-73, 1877-88 and 1910-26.

concerned, and their functions were similar. Of all the banks, however, only five were projected in Great Britain, of which three went into actual operation and two were successful (the Australasia and Union), and were by 1850 the largest banks in Australia. The local banks were first in the field—small joint stock banks which, initially on the basis of capital subscriptions, but later also on the basis of deposits, issued notes and discounted merchants' bills. The imperial banks, formed in London, were larger institutions with larger capital, and provided part of the necessary machinery for recruiting British capital to finance Australia production and trade. Complete generalization about their organization and practice is not possible, but certain points can be made.

The Australian banks had relatively large capital subscriptions and developed branches almost from the beginning; their note issues were competitive[15]; they paid interest on deposits; their business consisted mainly in discounting bills, but also of making loans on mortgage, and, particularly important, on the security of wool; in organization they were joint stock companies with unlimited liability and covered (with the exception of the Australasia with its Charter) by local acts of incorporation. It is true that loans on mortgage were discouraged, and in post-1846 acts (following the Treasury Instructions of that year) prohibited; but lending on mortgage, directly or indirectly, as Professor Butlin points out, was widespread, and one bank, the Derwent, became a mortgage bank, although its failure must have added strength to the orthodox view. The British influence was strong, and the most significant departure from orthodoxy was the lending of money on wool or produce when exported. But this was a necessary function of Australian banking, providing financial machinery to promote the production of the export staple. The very nature of Anglo-Australian trade was that bankers' remittances were largely based on wool. It was the same in other colonies, and credit on wool can be matched in this period by advances on indigo in India, on coffee in Ceylon, and on sugar in the West Indies and Mauritius. By 1850 Australia was developing what the Dutch in the Netherlands India called "culture banks", banks integrated into the colonial "culture" with a main function of promoting the development of a staple. Such finance was opposed to "sound banking" in the British sense, but Australian banking was a development of British banking to meet the particular needs of an economy radically different from that of Industrial Revolution Britain. The principles of banking

15. It was not until 1852 that a Select Committee of the New South Wales Council recommended "that a national bank of issue is absolutely necessary", in spite of the victory of the Currency School in the forties. There was nothing similar in Australia to Lord Sydenham's attempt in Canada in 1840 to found one bank of issue. In both Canada and Australia the legislatures were not impressed. Professor Butlin barely mentions the banking-currency controversy which dominated monetary theory in Great Britain between 1810 and 1844.

which were suited to the old, heavily populated, industrialized motherland, were not always applicable to the new, sparsely settled, pastoral offspring. There was not the same basis of large deposits and short-term loans, of a central bank, of consols and railway debentures. Australian banks could not have developed on the slender base of the orthodox mercantile bill; they had to invest in land and advance on wool. The general result, of course, was to make banking resources less liquid, and economic development more rapid.

4. Trade Cycle

A large part of Professor Butlin's book is concerned with the trade cycle—the boom and slump of the twenties, the boom of the thirties, and the slump of the forties, which provide the context of banking history between 1820 and 1850. Despite modest disclaimers that his analysis is no more than a "sketch", a "tentative discussion" with no claims for "completeness or finality", Professor Butlin's analysis is sufficiently detailed and novel to attract the serious attention of the historian of cycles. He explains the booms simply. "The dominant theme of the boom (in the twenties), as that of the thirties, was pastoral expansion financed by capital imports" (p. 190). His analysis of depressions, however, is more novel, and he argues that the depression of the forties arose from causes *inside* Australia, indeed, *inside* the wool industry, and "does not require the collapse of British investment which later historians have traced to the British crisis of 1839" (p. 318).

As far as I can gather Professor Butlin puts peak of activity in New South Wales in 1826-27 and 1839-40, and depressions in 1828-30 and 1841-43. Van Diemen's Land is not examined so carefully, though it "escaped both the slump and monetary troubles (of the twenties) and the banking crisis of the mainland" (p. 216); had "brief ups and downs" in the thirties (p. 228), and a depression in the forties. But there were *more* cycles than those mentioned by Professor Butlin: in New South Wales the peak years were 1826, 1836 (a boom year comparing with 1840), 1840, and 1847, and the trough years 1831, 1838, 1843 and 1848. In Van Diemen's Land the corresponding years were 1823, 1832, 1836, 1840 and 1847; and 1830, 1834 (as bad almost as 1843), 1838, 1843 and 1848. In South Australia the peaks were 1840 and 1847 and the troughs 1843 and 1848. The first thing to notice about these cycles is their close coincidence with the British cycles as analysed by W. W. Rostow. This phenomenon throws some doubt on Professor Butlin's analysis of the depression of 1841-43, in which he declares that "the rising level of costs and the narrowing of the scope for occupying new land" (pp. 316-17) was more important than trends in the price of wool. But wool was

Australia's staple export and the chief incentive for capital imports, and the prosperity of the English woollen industry in these years fluctuated considerably. Herbert Heaton, historian of the woollen industry, tells of "the boom of 1835-6, the crash of 1836, the partial recovery of 1837-8, and the long dark days that stretched from 1839 to 1842 or even 1843".[16] This chronology of events in the woollen industry, with a year time-lag, almost exactly parallels events in Australia. Certainly the cost situation was crucial, but if wages and prices in Australia were rising (as Professor Butlin points out —*without* documentation), the price of wool was going down continuously from 1834-36 to 1849.[17] Professor Butlin's thesis, it seems to me, is not proven. But if I disagree with him on the causes of the slump, I find his account of events during the depression admirable—with its detailed analysis of the various indices (auction sales, bankruptcies, trade statistics, land sales, bank failures, and unemployment) and most interesting account of the recovery measures (aimed mainly at reducing wages and interest rates, and allowing advances on wool). Unfortunately his story ends in 1843, without an account of the recovery.

Professor Butlin's analysis of the twenties is also unconventional: he distinguishes between "the purely financial crisis of 1826" and "the general depression of 1828-30". This view is hard to reconcile with the facts: the prices of wheat, maize and beef (from the *Sydney Gazette*) all declined steadily throughout 1826; the value of exports (and particularly wool) dropped sharply between 1826 and 1827; and contemporary comments in press and manuscript clearly connect the 1826 crisis with the subsequent depression. In 1825-26 began the first of those speculative outbursts that characterized all early booms in Australia. But the pressure of excessive imports on the balance of payments, the conversion of the colony's standard currency from dollars to sterling (which was in short supply), the fifty per cent. fall in the price of wool after 1825, were all deflationary, and began a depression which persisted for the rest of the decade.[18]

16. H. Heaton, *An Early Victorian Business Forecaster in the Woollen Industry* (*Economic History*, a supplement of *The Economic Journal*, January 1933), p. 558. See also the old standard work, J. James, *History of the Worsted Manufacture in England* (London, 1857), pp. 485, 488, 490-1, 494.

17. See the price index of wool imports into Great Britain by A. H. Imlah (*The Journal of Economic History*, November 1950, pp. 186-7); also Professor Butlin's own figures, p. 316.

18. One curious discrepancy in Professor Butlin's analysis concerns the relative influences of the formation of the Bank of Australia in New South Wales in 1826, and the Colonial Bank in Van Diemen's Land in 1840. In the former case "the Bank of New South Wales lost deposits (and therefore cash) heavily to the new competitor as shareholders paid up subscriptions, and its new deposits claimed cash at clearing" (p. 193). In the latter case, however, Professor Butlin claims (p. 280n) that only by "a very special combination of actions of note-holders, depositors and borrowers" would the formation of the Colonial Bank affect the policy of other banks. It is difficult to see that the conditions and results in either case was markedly different, and the effect of the new formations, in both cases, was to make other banks review their discount policy.

5. Conclusion

If I have criticized Professor Butlin, it is with the pleasure of disagreeing with a scholar of distinction, and of having some solid economic history to get one's teeth into, instead of the usual generalities. I can therefore, perhaps, close with a paraphrase of his remarks about another historian. The frequency with which I have noted Professor Butlin's omissions or disagreed with his analysis or conclusions, reflects my view that, while I think he is sometimes incorrect and I cannot accept all of his interpretation, his volume is the most substantial addition to the economic history of early Australia that has appeared since Coghlan. Here is an authority on the history of Australian money and banking to whom other students can turn with assurance that they are treading on firm ground.

R. M. HARTWELL

New South Wales University of Technology.

NEWS AND NOTES

In January of this year Mr. G. A. Weller retired from the editorship of the *Economic Record*. His many services to the Economic Society of Australia and New Zealand were fittingly recognized in his election by the Central Council to the office of President of the Society. Professor R. I. Downing, Ritchie Research Professor of Economics in the University of Melbourne, was appointed Editor of the *Record* in place of Mr. Weller.

From its foundation in 1925 to 1946, when he resigned after his appointment as Australian Minister to China, Professor (now Sir Douglas) Copland was Editor-in-Chief. Mr. Weller was then made a member of the Editorial Board, and in the following year appointed Editor. He had long been in effect Assistant Editor to Sir Douglas Copland, though his name did not appear on the cover of the *Record*. Perhaps only members of the Editorial Board can appreciate the extent of his devoted and sometimes thankless services during the last eight years.

Professor Sir Douglas Copland writes from Ottawa:

"Mr. G. A. Weller had a long and fruitful association with the editing of the *Economic Record*. For a considerable period in the thirties and during the whole of the war, he did a great deal of the day-to-day work of editing the journal, and relieved me as Editor-in-Chief at a time when I was preoccupied with other things and did not have time to attend to the detailed work. In this capacity, Mr. Weller was the perfect assistant, not only to me but to all the editors. He never protruded himself into the picture, but on the other hand he never allowed anything slipshod in form or content to appear in the journal, and there were times when this meticulous devotion to his task brought him into some conflict with contributors. In looking after the book reviews he was equally punctilious, and especially during the war his help was invaluable. The *Economic Record* was a remarkable success as a venture in publication from the very outset in 1925, and I well recall some shaking of heads about both the financial prospects and the probable quality of the contributions. Fortunately, we had co-operation on all sides, and we were able to bring the economists of Australia and New Zealand together in a common enterprise. We were not a large body in those days, but it soon became clear that many of the younger economists were delighted to have a suitable channel for publication of their researches, while the older brigade were ready to make contributions within the range of their special interests. Long before Mr. Weller's position was officially recog-

nized by the Council he gave his services freely in the work of editing, and the Council owes him a great debt. He thus contributed largely over many years to the success of the journal. I would like to express my own thanks to him, and I am sure the members of the Council and all members of the Society would like me to record their high appreciation of his devoted service. It is a fitting tribute that he should have been appointed President at the meeting of the Council recently in Canberra."

The Faculty of Economics and Commerce of the University of Melbourne has recently acquired a reproduction of the hydraulic model developed by A. W. Phillips of the London School of Economics for demonstrating macro-economic flows. An interesting discussion of its purpose is to be found in an article by Phillips in the August 1950 issue of *Economica*. The machine is now commonly known as the Moniac, a name suggested by Professor A. P. Lerner but which may have unfortunate repercussions in a country in which the E.N.I.A.C. (the name of the first of the electric automatic computers in the United States) is not so well known. While it is hoped that the Moniac will provide great assistance to the staff of the Faculty in teaching economics, it must unfortunately be admitted that it has the potentialities of a recalcitrant student.

A new organization, The Population Council, Inc., has recently been established as a non-profit corporation in order to encourage research and education concerning the relationship of the world's population to its material and cultural resources.

The Council plans to study the problems of the increasing populations of the world, to support research, and to make known the results of such research. It will serve as a centre for exchange of facts and information on population questions and co-operate with individuals and institutions having similar interests.

The Council does not plan to conduct research or educational activities with its own staff. It is planning to grant approximately six fellowships (for study in the United States and elsewhere) during the academic year 1954-55, to be divided between students from the United States and from other countries. It has already made a small number of research grants to universities and other established organizations, and has established a number of fellowships for the training of students in the field of population.

The address of the Council is 230 Park Avenue, New York 17, N.Y.

A meeting of the Central Council of the Economic Society of Australia and New Zealand was held in Canberra on 15 January 1954. Professor Prest acted as Chairman, in the absence of the President, Professor Simkin.

Mr. G. A. Weller was nominated as the next President of the Society. Other officers appointed were:

Honorary Secretary: Mr. R. F. Holder.

Honorary Assistant Secretary: Mr. L. Goldberg.

Honorary Editor of the *Economic Record*: Professor R. I. Downing.

Editorial Board: Professors S. J. Butlin, J. A. La Nauze, C. G. F. Simkin, Sir Lennon Raws and Dr. E. P. Neale, with the Editor, Professor R. I. Downing, ex officio a member of the Board.

Honorary Treasurer: Mr. A. A. Fitzgerald.

Auditors: Messrs. Runting and McDonald.

The thirtieth meeting of the Australian and New Zealand Association for the Advancement of Science was held in Canberra from 13th to 20th January 1954. Professor S. J. Butlin presided over Section G. His Presidential Address to the Section, "The Problem of Federal Finance", is printed elsewhere in this issue. Other papers read included:

J. U. T. Baker: Wage Adjustments in Inflation.

W. J. Byrt: Labour Mobility and Full Employment.

L. V. Castle: Cost and Financing of Social Security Cash Benefits in New Zealand.

K. O. Clark: The Reserve Bank of New Zealand Survey of Retail Trade.

D. Cochrane: Some Problems of Economic Development.

A. C. Cook and E. W. Jones: Full Cost Pricing in Western Australian Manufacturing Firms.

E. J. Donath: Marketing and Classification (Grading) of Australian Wheat.

G. O. Gutman: Investment in Development Projects.

A. J. Hagger: A Reconsideration of the Record of the Econometric Forecasts of National Expenditure.

A. R. Hall: Some Aspects of the New Issue Market and the Financing of Public Companies in Australia from 1946-1951.

R. M. Hartwell: The English Worker, 1800-1850.

R. F. Henderson: A British Visitor's First Impressions of the Australian Capital Market.

R. R. Hirst: The Measurement of Industrial Production.

L. G. Hopkins: Official Indexes of Industrial Production.

K. L. Kinsman: Estimating Production Costs on Mixed Farms.

R. Mendelsohn: Australian Social Security: Some Financial and Economic Aspects.

D. H. Penny: The Living Area.

E. A. Saxon: The Measurement of Movement in Prices Received and Paid by Primary Producers.

G. W. Smith and A. J. Campbell: The International Wheat Agreement.

S. P. Stevens: An Index of Australian Manufacturing Production.

R. J. Whitelaw: Reflections on the Sterling Area.

Mr. Cyril Renwick, formerly Senior Lecturer in Economics in the University of Sydney, has been appointed Associate Professor of Economics in the New South Wales University of Technology. He will be in charge of the teaching of Economics at the Newcastle University College. This is the first appointment to this position.

LIST OF BRANCH SECRETARIES

Victoria: Mr. D. M. Hocking, 185 Glen Iris Road, Glen Iris, S.E.6.

New South Wales: Mr. E. J. Thompson, C/o M.L. & C. Ass. Co. Ltd., 46 Martin Place, Sydney, N.S.W.

Western Australia: Mr. W. P. Mark, C/o Employers' Federation, Box No. P1225, G.P.O., Perth, W.A.

South Australia: Mr. R. L. Griggs, C/o Department of Economics, University of Adelaide, Adelaide, S.A.

Tasmania: Mr. A. Hagger, C/o Economics Department, University of Tasmania, Hobart, Tasmania.

Queensland: Mr. A. S. Holmes, Department of Economics, University of Queensland, St. Lucia, Brisbane, Queensland.

Canberra: Mr. R. H. Barback, Canberra University College, Canberra, A.C.T.

Wellington: Mr. I. F. E. Wilson, C/o Messrs. Bowden, Bass & Cox, P.O. Box 986, Wellington, C.1, New Zealand.

Christchurch or Canterbury: Mr. R. H. Murray, 82 Marlow Road, Christchurch, E.3, New Zealand.

Auckland: Mr. O. T. Foster, Kerridge Theatres Ltd., Queen Street, Auckland, New Zealand.

Dunedin: Mr. R. O. Smellie, Department of Economics, University of Otago, Dunedin, New Zealand.

NOTES

AN INDEX OF AUSTRALIAN MANUFACTURING PRODUCTION[1]

A. *Introduction*

The Statistical Commission of the United Nations Economic and Social Council recommended to its members the calculation and publication of a monthly index of industrial production, comprising data on—

(a) Mining

(b) Manufacturing

(c) Construction

(d) Public Utilities.

It recommended the use of the Laspeyres formula for this purpose.[2]

The main objection to the Commission's recommendation came from Australia. Thus, although twenty-five Western nations publish partial or reasonably full indexes of industrial production, Australia so far has not produced an official index. The present paper tries to fill part of this gap. It presents an index of manufacturing and power production only for the years since the end of World War II. This index is based on annual statistics of production and attains a coverage of approximately 60 per cent. of base year value of output for the total field of manufacture.

B. *Objections to the Compilation of Indexes of Production*

Difficulties encountered in measuring industrial production are best discussed on the basis of a summary of the main points made by Australia to the Statistical Commission of U.N.E.S.O.C. These were:

(a) the relation between inputs and outputs may change over time (change in technique);

(b) the quality of a product may change over the period covered by the index;

(c) series used in the calculation may be composed of heterogeneous articles or sizes, so that information on the

1. This is an extract of a paper delivered to Section G of the Australian and New Zealand Association for the Advancement of Science at Canberra in January 1954.

2. This formula is Index $= \frac{\sum p_0 q_1}{\sum p_0 q_0}$, where p_0 = net base year price of one unit of output, q_0 = quantity of output of product in base year, q_1 = quantity of output of product in given year.

quantity of units produced is insufficient for arriving at a valid index;

(d) the inclusion in the index of series represented by indirect indicators makes an index unreliable as the relationship between indicators and output need not be constant.

A further objection may be made on the grounds that different formulae used may yield different results. Most of these objections are well founded and steps have to be taken to mitigate or eliminate their effects on an index.

The Statistical Commission of the United Nations has given the advice that a relatively frequent shift of the base year will overcome many of these objections, and that the judicious use of secondary indicators (other than quantum figures of production) will also help to reduce inaccuracy.

The difficulty inherent in arriving at different results when using different formulae cannot be overcome; it is part and parcel of the index number problem which is incapable of solution. What we can do is to select one formula and for all practical purposes consider that as the correct formula. The Laspeyres formula selected by the Statistical Commission was, therefore, used in these calculations.

The base year for the index—the year 1947/48—was selected with the intention of overcoming the need for changing the base year for the present series. Had the Production Bulletin for 1951/52 been available, a new base year would have been introduced. But, as no year was more than four years distant from the base year—a not unreasonably long period—the one base year for the whole of the index was retained.

Another means of overcoming inconsistencies in quantum statistics is to substitute the appropriate value-of-output series for quantum data. In order to employ value-of-output series it has been found necessary to collect reliable information on price changes for use as deflators. Changes in factory prices have been collected from individual firms and the Victorian Prices Commissioner for 30 series accounting for 21 per cent. of the base year value-of-output.

In one instance, input figures were used as indicators for outputs of a product. However, there are few series in Australia for which input statistics are satisfactory but output figures are not.

Work on the index appeared to invalidate Australia's generic objection to the use of secondary indicators. It is considered that value-of-output figures when used in conjunction with reliable price deflators yield satisfactory consistent values for the index. In fact, in all instances where quantum figures contain information on goods of varied types, sizes or quality, deflated value of output figures are far more reliable and should be substituted for them.

No other secondary indicators were used in compiling the index, as it was found that they were not suitable substitutes for information on quantities of production. This is particularly true of employment figures. If such indicators were used, we would either have to assume that no changes have occurred in productivity, or allow for such changes by making an arbitrary assumption about their magnitude. Either method would yield unsatisfactory results.

In concluding this argument it may be of advantage to point out that close knowledge of the manufacturing sector of industry is essential for the recognition of unsatisfactory primary data. A mechanistic approach to the compilation of an index of industrial production is bound to lead to mistakes.

C. *Calculation of the Index*

The main problem encountered after agreeing on the formula is that of making the coverage of the index large enough.

Fabricant[3] has maintained that a 40 per cent. coverage of the whole field of production would yield satisfactory results. While this may be true of a few homogeneous series, a somewhat higher percentage—usually 50 per cent.—may be considered a minimum requirement for most series.

Australian published production statistics do not allow a much higher coverage than 44 per cent. to be achieved when using quantity of production figures only. For this reason, series for which value-of-output figures only were available had also to be used for arriving at a higher, more satisfactory coverage.

It was found necessary to construct indexes of changes in factory prices for a large number of series (see Appendix A). Their use increased the coverage of the index to a maximum of 66 per cent. and a minimum of 56 per cent. of the whole field of manufacture. (Only two years remained below a 60 per cent. coverage: 1945-46, for which year published statistics were less complete and in many instances prices series could not be obtained, and 1951-52, for which the full Production Bulletin is not available at the time of writing.) A coverage of 60 per cent. or more may be considered satisfactory, and should yield a reliable index.

In all, 771 individual series amounting to £321m. of base year production contained in 130 sub-classes are used in the index. No information was available on 40 sub-classes (including the two insignificant Classes V and XIV) with a base year value of production of £51m.

The following table shows the index which resulted from the use of annually published statistics. Table I provides annual informa-

3. S. Fabricant, *Output of Manufacturing Industries 1899-1937*, p. 370.

tion by class only, while information on sub-classes is contained in Appendix B.

TABLE I

*Index of Australian Manufacturing Production for the Years 1945-46 to 1951-52**

1945-46 = 100

Class	1945 to 1946	1946 to 1947	1947 to 1948	1948 to 1949	1949 to 1950	1950 to 1951	1951 to 1952
I. Treatment of Non-metalliferous Mine and Quarry Products ..	100	118	147	159	179	207	226
II. Bricks, Pottery, Glass, etc. ..	100	122	133	143	148	164	166
III. Chemicals, Dyes, Explosives, Paints, Oils, Grease	100	107	122	136	147	178	173
IV. Industrial Metals, Machines, Conveyances	100	115	128	144	142	174	191
VI. Textiles and Textile Goods (not dress)	100	111	118	115	121	136	113
VII. Skins and Leather	100	117	115	112	118	114	106
VIII. Clothing (except Knitted) ..	100	129	145	152	139	151	139
IX. Food, Drink and Tobacco ..	100	103	110	114	123	131	129
X. Sawmills, Joinery, Boxes, etc. ..	100	104	112	120	133	129	142
XI. Furniture of Wood, Bedding, etc.	100	127	156	157	179	198	181
XII. Paper, Stationery, Printing, etc.	100	123	133	139	145	153	172
XIII. Rubber	100	126	139	149	163	185	206
XV. Miscellaneous Products	100	107	139	146	135	164	145
TOTAL CLASSES I. to XV... ..	100	111	120	128	135	149	151
XVI. Heat Light and Power	100	107	118	124	133	145	157
TOTAL CLASSES I. to XVI. ..	100	111	120	128	135	149	151

* Classes V and XIV have not been included.

The coverage on which these figures are based is shown in Table II. It is significant that with four exceptions all classes show a coverage of over 60 per cent. Classes V and XIV and the heterogeneous Class XV (Miscellaneous) are either not represented at all or very lightly covered. Coverage for the important Class IV is over 40 per cent. for all years but 1945-46 and the incomplete 1951-52. While there is much scope for improvement, even this class satisfies Fabricant's minimum requirement.

TABLE II

*Coverage of Classes in the Index of Production for the Years 1945-46 to 1951-52**

Coverage per cent. of Base Year Total Value of Production

Class	1945 to 1946	1946 to 1947	1947 to 1948	1948 to 1949	1949 to 1950	1950 to 1951	1951 to 1952
I. Treatment of Non-metalliferous and Quarry Products	60	61	69	65	69	69	68
II. Bricks, Pottery, Glass, etc. ..	67	69	73	73	65	73	73
III. Chemicals, Dyes, Explosives, Paints, Oils, Grease	61	58	61	61	61	61	59
IV. Industrial Metals, Machines, Conveyances	38	40	43	42	42	42	34
VI. Textiles and Textile Goods ..	72	74	74	74	72	74	64
VII. Skins and Leather	73	73	73	73	72	73	72
VIII. Clothing (except Knitted) ..	94	93	94	93	93	93	93
IX. Food, Drink, Tobacco	82	81	83	83	83	82	81
X. Sawmills, Joinery Boxes, etc. ..	82	83	86	86	86	85	67
XI. Furniture of Wood, Bedding, etc.	77	77	79	77	77	76	76
XII. Paper, Stationery, Printing, etc.	84	84	92	80	89	85	85
XIII. Rubber	72	59	77	75	77	77	73
XV. Miscellaneous Products	19	20	29	28	24	27	11
TOTAL CLASSES I. to XV.	55	62	65	64	65	64	58
XVI. Heat Light and Power	100	100	100	100	100	100	100
TOTAL CLASSES I. to XVI. ..	56	63	66	65	65	64	59

* Classes V and XIV have not been included.

Finally, a different grouping of products, by type of use rather than statistical class, showed the following production increases between 1945-46 and 1951-52:

	Percentage Increase between 1945-46 and 1951-52
Durable Consumer Goods	140%
Investment Goods	90%
Building Materials and Furnishings	87%
Materials and Containers	46%
Non-durable Consumer Goods	29%

It may be mentioned that the production of durable consumer goods was at a particularly low ebb in 1945-46, and that much of

the increase went towards reaching pre-war levels of production in those items. The production of non-durable consumer goods, which contain most of Australia's manufactured exports, had been particularly low in 1951-52, because of an unfavourable season in certain parts of Australia. Considerable increases in the production of investment goods and building materials (including furnishings) reflect, besides a recovery from the low wartime levels of production, also a considerable effort on Australia's part to overcome shortages of the post-war period by the building up of her basic industries.

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APPENDIX A

Price Series Used in Compiling Index

This appendix lists only those price series which were obtained from data not available from the basic sources used for the index. Thus no information is given here on such series which are based on average prices of a subclass and similar data.

Price Indexes used for the Index of Manufacturing Production

Class	1945 to 1946	1946 to 1947	1947 to 1948	1948 to 1949	1949 to 1950	1950 to 1951	1951 to 1952	1952 to 1953
CLASS II								
Porcelain Insulators	100	112	116	130	153	178	213	235
Earthenware:								
Sanitary	100	116	140	171	191	218	247	—
Domestic	100	114	134	171	204	228	251	—
Glassware:								
Bottles and Jars	100	110	115	129	143	185	218	235
Sheets	100	106	123	126	158	206	242	271
CLASS III								
Weed Killers and Insecticides	—	—	100	111	133	130	163	182
Disinfectants	100	100	100	100	125	143	186	—
Medicinal Products	100	99	99	98	114	135	157	—
Dentifrices	100	93	104	106	106	106	128	—
Lipstick	100	100	108	108	108	114	135	—
Rouge	100	100	100	100	111	121	130	—
CLASS IV								
Iron and Steel:								
Pig Iron	—	—	100	—	133	—	—	—
Merchant Bar	100	105	112	123	133	—	—	—
Rails 60 lb. and over ..	100	107	116	125	136	—	—	—
Rails up to 45 lb.	100	104	111	122	132	—	—	—
Joists 6×3 and wider ..	100	105	112	123	133	—	—	—
Iron castings	100	100	114	121	125	135	153	—
Machinery:								
Laundry	100	101	114	121	137	150	—	—
Refrigerating	100	106	120	129	135	162	192	—
Metal Working	100	102	110	111	118	142	177	—
Air Conditioning	100	106	120	129	135	162	192	—
Bakery	100	102	115	127	134	159	184	—
Earthmoving and Road-making	100	100	122	132	146	178	228	—
Conveyors, Hoists, etc. ..	100	100	122	132	146	178	288	—

Class	1945 to 1946	1946 to 1947	1947 to 1948	1948 to 1949	1949 to 1950	1950 to 1951	1951 to 1952	1952 to 1953
CLASS IV (*Continued*)								
Machinery:								
Pumping	100	102	113	122	128	141	204	—
Machine Tools	100	102	110	111	118	142	177	—
Average for Other Engineering	100	101	114	121	133	150	—	—
Electric Motors	100	128	137	144	146	167	—	—
Starting and Controlling Apparatus	100	116	133	164	191	201	—	—
Average for Other Electric Apparatus and Equipment	100	101	114	119	139	173	—	—
Non-Ferrous Founding and Casting	100	115	133	152	172	206	252	—
Average for Other Sheet Metal Working	100	102	114	122	126	136	153	—
Kitchenware:								
Aluminium	100	101	103	106	115	127	137	—
Brass and Copper	100	101	107	114	120	165	—	—
Packers Cans	100	113	129	152	174	215	247	—
CLASS VI								
Canvas Goods	—	—	100	116	145	185	292	254
CLASS VIII								
Tailoring, Dressmaking and Millinery	100	106	118	137	160	196	240	—
Boot Repairs	100	100	100	120	130	140	164	—
Dry cleaning	100	100	105	125	145	154	191	—
CLASS IX								
Wheaten Flour	—	100	114	129	136	149	181	203
Cakes	100	100	160	165	176	188	218	—
CLASS X								
Hardwood	100	103	121	135	151	174	—	—
Softwood—Pine	100	111	129	125	126	134	185	—
Other	100	102	120	134	149	165	197	—
Joinery	100	100	131	159	174	207	263	—
CLASS XI								
Furniture	100	105	117	140	147	167	212	—
CLASS XII								
Newspapers	100	100	100	113	125	162	187	200
Printing	100	107	116	132	147	168	206	—
Paper—Envelopes	100	125	150	150	250	375	425	450
Exercise books	100	111	128	133	178	217	255	289
Writing tablets	100	114	133	158	191	213	266	300
Average stationery	100	117	137	147	206	268	315	346
Printing	100	103	109	125	145	176	220	—
Paperbags	100	100	105	112	125	141	209	—
Cartons	100	100	103	110	155	237	337	—
CLASS XV								
Plastics:								
Lamps	—	—	100	105	113	119	122	123
Garden Hose	—	—	100	107	120	133	129	122
Radio Cabinets	—	—	100	107	122	132	139	—
Lamp shades	—	—	100	112	129	138	138	125
Laminate Sheet	—	—	100	107	122	136	144	151
Holloware	—	—	100	113	127	138	139	136
Toys	—	—	100	107	127	147	144	141
Average for Other Plastic Goods	—	—	100	107	122	133	134	130

Appendix B

Index of Manufacturing Production in Class and Subclass

1945/46 = 100

Class	Subclass	1945 to 1946	1946 to 1947	1947 to 1948	1948 to 1949	1949 to 1950	1950 to 1951	1951 to 1952
I.	1. Coke Works	100	122	140	117	232	256	289
	2. Briquetting	100	100	111	115	120	107	115
	3. Lime, Plaster of Paris ..	100	144	172	188	207	257	265
	4. Fib. Plaster and Products ..	100	162	212	256	231	278	293
	5. Portland Cement	100	122	140	144	163	171	173
	6. Asbestos Cement Sheets ..	100	125	117	121	108	137	145
	7. Other Cement Goods ..	100	65	149	185	215	261	305
	Total Class I	100	118	147	159	179	207	226
II.	1. Bricks and Tiles	100	150	166	178	183	206	212
	2. Earthenware, China, etc. ..	100	124	132	139	139	162	167
	3. Glass (other than bottles) ..	100	122	133	137	137	199	175
	4. Glass Bottles	100	85	88	97	107	99	97
	Total Class II	100	122	133	143	148	164	166
III.	1. Ind. and Heavy Chemicals	100	135	135	158	181	279	225
	2. Pharm. and Toilet Preps. ..	100	98	118	125	126	152	133
	3. White Lead, Paints, etc. ..	100	101	123	133	148	211	183
	4. Vegetable Oils	100	73	41	105	109	315	—
	5. Mineral Oils	100	530	715	940	1080	1330	1548
	6. Animal Oils	100	163	159	148	130	100	—
	7. Boiling-down, etc.	100	112	105	107	128	115	108
	8. Soap and Candles	100	95	105	116	113	134	144
	9. Chemical Fertilizers ..	100	112	112	137	139	151	153
	10. Inks, Polishes, etc.	100	107	122	131	152	184	185
	11. Matches	100	115	115	114	125	125	125
	Total Class III	100	107	122	136	147	178	173
IV.	1. Smelting, etc., Iron and St.	100	127	131	126	126	161	145
	2. Ferrous Foundries	100	114	118	101	111	101	—
	3. Plant and Machinery ..	100	166	200	231	260	306	300
	4. Other Engineering	100	102	116	129	151	185	196
	5. Extracting Other Metals ..	100	101	101	109	103	101	110
	6. Electrical Machinery, etc. ..	100	110	121	133	158	223	272
	7. Tram & Railway Equipment	100	218	73	80	71	84	—
	8. Motor Bodies	100	159	217	261	263	348	404
	9. Motor Accessories	100	118	164	188	238	351	307
	10. Horse drawn Vehicles ..	100	304	475	205	138	46	—
	11. Cycles and Accessories ..	100	94	101	92	125	162	119
	12. Ship and Boat Building ..	100	42	57	32	65	43	117
	13. Cutlery and Small Tools ..	100	85	105	107	173	112	145
	14. Agricultural Implements ..	100	103	99	113	115	138	160
	15. Non-ferrous Rolling, etc. ..	100	154	189	154	187	228	212
	16. Non-ferrous Founding, etc.	100	80	98	129	187	247	—
	17. Galvanised Ironworking ..	100	90	102	103	110	120	133
	18. Wireworking	100	143	164	164	193	258	230
	19. Stoves, ovens, etc.	100	115	208	254	252	287	268
	20. Gas Meters	100	118	149	163	178	218	152
	21. Lead Mills	100	236	277	194	242	228	—
	22. Wireless	100	193	196	173	206	242	231
	Total Class IV	100	115	128	144	142	177	191
V.	No subclasses	—	—	—	—	—	—	—

Class	Subclass	1945 to 1946	1946 to 1947	1947 to 1948	1948 to 1949	1949 to 1950	1950 to 1951	1951 to 1952
VI.	1. Cotton Ginning	100	170	116	108	43	—	—
	2. Cotton Spinning, Weaving	100	111	114	116	127	147	150
	3. Wool, Spinning and Weaving	100	104	110	108	107	107	84
	4. Hosiery and Knitted Wear	100	117	131	126	137	214	142
	5. Flax Mills	100	84	64	51	63	25	—
	6. Rope and Cordage	100	106	108	84	97	97	106
	7. Canvas Goods	100	69	54	56	66	69	51
	8. Bags and Sacks	100	116	121	111	134	117	133
	9. Other	100	122	156	184	159	175	—
	TOTAL CLASS VI	100	111	118	116	121	136	113
VII.	1. Wool Scouring	100	120	115	105	111	99	77
	2. Tanning, etc.	100	108	111	110	110	110	110
	3. Saddlery, Harness	100	127	141	169	159	156	—
	4. Machine Belting	100	150	141	130	—	137	140
	5. Bags, Trunks, etc.	100	135	118	119	143	137	121
	TOTAL CLASS VII	100	117	115	112	118	114	106
VIII.	1. Tailoring	100	118	122	132	120	121	104
	2. Dressmaking	100	111	130	138	114	120	90
	3. Millinery	100	89	95	88	87	86	71
	4. Shirts	100	112	116	137	138	153	160
	5. Foundation Garments	100	136	156	143	159	179	202
	6. Hats and Caps	100	114	121	109	94	66	65
	7. Gloves.	100	125	100	87	86	91	83
	8. Boots and Shoes	100	139	133	139	125	145	136
	9. Boot and Shoe Repairs	100	105	112	102	103	109	108
	10. Boot Accessories	100	191	151	—	106	—	303
	11. Umbrellas	100	137	162	190	254	—	—
	12. Dry Cleaning	100	135	149	149	138	164	159
	TOTAL CLASS VIII	100	139	145	152	139	151	139
IX.	1. Flour Milling	100	118	125	131	119	133	131
	2. Cereal Foods	100	121	130	126	121	133	122
	3. Bakeries	100	107	112	114	132	136	137
	4. Biscuits	100	106	115	124	137	145	179
	5. Confectionery	100	109	109	114	122	125	114
	6. Jam, etc.	100	102	129	102	108	129	128
	7. Pickles	100	105	98	130	119	122	126
	8. Bacon Curing	100	78	75	69	66	57	58
	9. Butter	100	98	111	113	119	110	93
	10. Cheese	100	120	118	125	135	133	115
	11. Processed Milk	100	82	88	97	107	104	102
	12. Margarine	100	91	101	116	148	128	119
	13. Meat Canning	100	99	106	93	113	111	124
	14. Condiments	100	95	92	96	102	95	81
	15. Ice	100	128	130	133	133	137	134
	16. Salt	100	85	105	91	97	87	99
	17. Aerated Waters	100	94	116	89	171	151	176
	18. Ale	100	120	119	139	144	157	170
	19. Malting	100	123	131	134	146	150	162
	20. Tobacco	100	117	116	112	119	124	131
	21. Ice Cream	100	110	125	140	152	160	160
	22. Sausage Skins	100	118	127	149	163	169	169
	23. Other (including sugar)	100	87	95	124	123	125	113
	TOTAL CLASS IX	100	103	110	114	123	131	129

Class	Subclass	1945 to 1946	1946 to 1947	1947 to 1948	1948 to 1949	1949 to 1950	1950 to 1951	1951 to 1952
X.	1. Saw Mills	100	118	125	135	156	131	139
	2. Plywood Mills	100	124	141	160	153	210	—
	3. Bark Mills	100	100	107	100	86	94	—
	4. Joinery	100	124	119	134	163	190	199
	5. Cooperage	100	88	172	171	66	64	—
	6. Boxes and Cases	100	81	72	74	56	60	48
	7. Woodturning	100	115	105	103	100	93	—
	8. Perambulators	100	93	116	78	96	115	106
	9. Wall Boards	100	104	112	142	158	173	183
	TOTAL CLASS X	100	104	112	120	133	129	142
XI.	1. Cabinet & Furniture Making	100	130	159	154	176	196	177
	2. Bedding	100	124	138	173	205	225	214
	3. Picture Frames	100	117	125	125	126	144	119
	TOTAL CLASS XI	100	127	156	157	179	198	181
XII.	1. Newspapers	100	128	132	138	175	160	172
	2. Printing	100	115	132	134	137	150	172
	3. Manufactured Stationery	100	103	112	120	101	110	129
	4. Cardboard Boxes	100	143	169	188	159	134	238
	5. Paper Bags	100	129	154	189	167	206	246
	6. Paper Making	100	115	125	128	125	125	141
	TOTAL CLASS XII	100	123	133	139	145	149	172
XIII.	1. Rubber Goods	100	140	154	166	180	202	222
	2. Tyre Re-treading	100	—	103	105	119	148	169
	TOTAL CLASS XIII	100	126	139	149	163	185	206
XIV.	No Subclasses	—	—	—	—	—	—	—
XV.	1. Linoleum, Plastics, etc.	100	107	139	171	160	229	251
	2. Brooms and Brushes	100	84	114	117	119	138	122
	3. Toys, Games, etc.	100	147	182	172	153	140	113
	TOTAL CLASS XV	100	107	139	146	135	164	154
	TOTAL CLASSES I TO XV	100	111	120	128	135	149	151
XVI.	1. Electric Light and Power	100	108	120	130	137	154	162
	2. Gas	100	106	114	113	122	125	144
	TOTAL CLASS XVI	100	107	118	124	133	145	157
	TOTAL CLASSES I TO XVI	100	111	120	128	135	149	151

LABOUR TURNOVER IN NEW ZEALAND INDUSTRIES

Under conditions of full employment, the central economic problem of scarcity of means of production is pressing; expansion of output in one industry either curtails outputs of other industries or restricts their expansion, failing compensating increases of productivity and efficiency. It is not surprising that so much emphasis is being placed on the need for increasing output per factor unit, especially by technological improvements, in order to sustain progressive increases in living standards. A high and excessive turnover of labour in industry, above all where loss of output can have serious repercussions by causing shortages and bottlenecks, will have a harmful influence on gross national product. Unfortunately, as Soviet Russia's experience in the thirties has shown,[1] turnover of labour can become excessive under full employment.

The appended table shows labour turnover for both sexes in certain New Zealand industries for the periods April-October 1946, and November 1952-April 1953. Turnover has been computed for each industry as: $\frac{\text{Total terminations in period}}{\text{Average payroll strength}} \times \frac{100}{1}$

In order to concentrate on the more important industries, those which do not employ more than 200 workers of the sex concerned have been omitted. The table also shows the overall and sector averages, which include all industries in the survey.

It appears from the table that the overall labour turnover has increased between 1946 and 1953. But the months considered are different, and seasonal factors, e.g. casual employment of students, could well account for this. There is some evidence that turnover is greater in manufacturing than in tertiary industries.

We also see that there is a higher rate of turnover among the female labour force, a result not unexpected because of such factors as marriage, etc. Moreover, for similar reasons, the majority of women are in unskilled positions, and turnover is higher in such occupations.

We should expect average weekly earnings to be an important cause of labour turnover and that the relationship would be negative since, other things being constant, high turnover would be associated with low earnings and low turnover with high earnings. A correlation of —0·3714, which is significant at the 1% level of probability, was obtained between average turnover (male and female) and average weekly payout for the 1953 data. The low determination ($r^2 =$ 13·8%), however, points strongly to there being other important factors.

Closely allied to average earnings is, of course, the relationship between skilled and unskilled work, and we expect turnover to be

1. M. Dobb, *Soviet Economic Development since 1917*, 1949, p. 444 et seq.

greater in those industries using mainly unskilled workers. With the present narrow margins of pay between skilled and unskilled labour,[2] there is in many cases little incentive to become skilled at one particular job. This lack of incentive is probably reinforced by food subsidies and rent controls, which give an apparently high money wage in terms of these basic requirements, and also by the discouraging effects of high marginal rates of taxation. Thus we find a high turnover in such industries as forestry, biscuit making, brick and tiles, sawmilling, hotels and hospitals. On the other hand, turnover is much lower in coalmining, bread bakeries, cabinet-making, some of the engineering trades, printing and publishing, water transport, and many of the administrative and professional occupations.

Conditions and type of work, together with location, are further complicating factors. These are obviously important in explaining the higher turnover in the domestic and personal services group. They also help explain the comparatively high turnover in such industries as sawmilling, bricks and tiles, lime and cement and chemicals, where average earnings are relatively high.

In some cases one may partly explain turnover by considering the availability or otherwise of alternative opportunities either within an industry or between industries. For instance in coalmining there is a low turnover partly because there are few alternative occupations for a skilled miner, and also few other industries in the mining area. In such industries as clothing, woollen and knitting mills, road transport, and in the wholesale and retail trades, however, labour can adopt a "casual attitude" to any firm.

With one or two isolated exceptions, both male and female turnover is considerably less in the tertiary industries than in manufacturing. Most of these "white collar" jobs require some specialized training or professional or academic qualifications and have advantages of superannuation schemes, pleasant conditions of work, and so on.

The influence of apprenticeships and similar training schemes should also be mentioned as factors encouraging greater stability of the labour force. Turnover is somewhat lower in the engineering and metal working trades where apprenticeships are fairly common.

We see that there are many interacting factors, all of which should be considered, causing labour turnover. In this note only the more important and obvious ones have been mentioned. To isolate any one as being decisive, however, seems difficult. In the main the large labour turnover is one of the costs of current full employment policies with their emphasis on super-full employment and guaranteed jobs.

Maney Agricultural College. G. P. BRAAL

2. New Zealand Official Year Book, 1953, p. 842.

TABLE

Labour Turnover in Selected Industries, 1946 and 1953[3]

Industrial Group	Male		Female	
	1946 (6 months)	1953 (6 months)	1946 (6 months)	1953 (6 months)
FORESTRY, MINING AND QUARRYING				
Forestry	17	64	—	—
Coalmining	9	14	—	—
Other Mining	17	24	—	—
Quarrying	24	25	—	—
Group	13	29	—	—
FOOD, DRINK, TOBACCO				
Grain milling	21	32	—	—
Bread bakeries	16	16	21	23
Biscuit making	52	65	46	71
Cake and pastry making	22	23	30	29
Sugar and confectionery	33	33	58	50
Other food	31	33	42	58
Beverages	13	24	29	20
Tobacco manufacture	41	35	54	35
Group	22	28	39	41
TEXTILES, CLOTHING, LEATHER				
Tanneries	20	25	—	—
Fur dressing and manufacture	15	28	27	35
Leather goods	15	19	28	30
Flax, rope and twine	17	26	—	—
Woollen and knitting mills	21	18	32	26
Clothing manufacture	23	19	27	31
Footwear manufacture	21	21	38	32
Group	21	20	29	30
BUILDING MATERIALS AND FURNISHINGS				
Sawmilling	26	36	19	39
Builders' woodwork	17	17	—	—
Furniture	11	15	25	24
Other wood manufacture	34	29	—	—
Brick and tiles	39	40	—	—
Pottery and glass	29	33	21	12
Lime cement	24	32	—	—
Group	23	29	22	26
ENGINEERING AND METAL WORKING				
Engineering and Machinery	22	22	36	30
Electrical manufacture	29	23	30	28
Ships, locomotives etc.	13	12	—	—
Vehicle and aircraft	29	25	36	26
Vehicle repair	13	14	17	22
Group	19	18	29	27

3. Source: N.Z. Dept. of Labour and Employment Gazettes.

Industrial Group	Male		Female	
	1946 (6 months)	1953 (6 months)	1946 (6 months)	1953 (6 months)
MISCELLANEOUS MANUFACTURING				
Chemical	22	29	34	31
Rubber manufacture	25	18	36	36
Paper and paper products	13	24	31	40
Printing and publishing	10	11	21	24
Instruments, clocks, etc.	16	13	21	31
Other manufacturing	28	27	40	49
Group	16	19	28	32
Sub-total, manufacturing industries	20	22	30	31
Power, Water and Sanitary	13	17	16	15
TRANSPORT AND COMMUNICATION				
Rail	10	13	35	30
Road	12	17	21	21
Water	10	8	14	12
Air	3	12	—	—
Post and Telegraph	2	8	24	16
Group	8	12	26	19
DISTRIBUTION AND FINANCE				
Wholesale and Retail	13	16	19	26
Finance	5	8	20	16
Insurance	6	7	17	16
Other agencies	11	15	16	19
Group	11	14	19	23
DOMESTIC AND PERSONAL SERVICES				
Hotels	25	44	37	49
Laundries	20	26	27	37
Barbers	15	18	19	24
Recreation	11	15	27	21
Group	20	31	33	43
ADMINISTRATIVE AND PROFESSIONAL				
Hospitals	18	21	31	37
Medical services	10	10	11	18
Education	4	13	7	19
Arts, Science, Religion	7	17	—	—
Government (n.e.i.)	9	6	16	15
Local Authorities	14	17	17	17
Group	10	12	20	26
Sub-total, Tertiary industries	11	14	22	27
All Industries	14	18	24	28

ECONOMIC STABILITY IN NEW ZEALAND[1]

The essays collected in this little volume were originally delivered as addresses to the fifth annual convention of the New Zealand Institute of Public Administration, held in May 1953. It was felt by the organizers that New Zealand could provide a particularly "useful case study for those who want to understand the economic and administrative implications of stability, because her governments have been more active than most in promoting stability, and also because the implications are more easily seen in New Zealand than in larger and more complex economies" (p. 1). It is indeed noteworthy that — leaving aside minor shades in emphasis — all the speakers in this conference seemed to agree that broadly speaking New Zealand's economic policies have so far turned out to be "both flexible and adaptable" (p. 26), and remarkably successful in "obtaining a reasonable degree of stability without an undue sacrifice of the stimuli towards development" (p. 59), although it is on record that these policies have been inspired in no small measure by what Mr. L. C. Webb politely described as that "transcendental logic of politics which enables the makers of political programmes to promise full employment, stability of returns to primary producers, stable prices . . . , balance of payments equilibrium" (p. 13), and many more good things, all happily at the same time. Clearly there is a *prima facie* case for exploring how in practice the New Zealand economy has achieved a reconciliation of such mutually incompatible targets.

It was a happy idea of the Institute to provide a Forum in which academic observers could exchange opinions with officials in intimate contact with the daily routine of administration. Prof. H. Belshaw opened up with an entertaining account of the theoretical complexities that have to be faced when one tries to reconcile a rapidly growing economy with a desire for stability. Messrs. H. G. Lang, M. J. Moriarty, and G. J. Schmitt from the Treasury, and Mr. G. E. F. Wood from the Statistical Department were able to treat the audience to most interesting glimpses into the actual working of various government departments. One is surprised at the variety of arrangements that have been, and are being, applied in New Zealand in a refreshingly experimental spirit in order to achieve some co-ordination among the different branches of the administration. And the reader of these papers is left in no doubt that the successes of government in New Zealand owe much to the happy disposition of her people to leave doctrines severely alone when it comes to the point of implementing them, and to work out feasible solutions through compromise.

1. *Economic Stability in New Zealand.* Edited by R. S. Parker. (Wellington, New Zealand Institute of Public Administration, 1953.) Pp. 146. No price stated.

This picture is well supported by a lively contribution from the pen of Mr. L. C. Webb, who has some trenchant things to say about politics in a democracy. He skilfully supports his contentions by detailed sketches of the contesting claimants, of the various pressure groups that have to be delicately balanced against one another, and the forceful role that dominant personalities are able to play in the shifting scene of political configurations. Some of Mr. Webb's remarks, the reviewer feels, could usefully have been developed a little further. "The difficulties in the way of an integrated system of policy making"—he writes for instance—"are somewhat (sic!) eased in New Zealand by the smallness of the country and the relatively simple nature of the economy. The circle of Ministers and high officials in Wellington is a small one, so that informal personal contacts can often overcome problems of co-ordination which in larger countries have to be met by an elaborate apparatus of committees. In consequence, policy-making arrangements have been simple" (p. 23). Surely this is a masterful understatement.

One reflects for instance that these policies are concerned with barely two million souls, i.e. the population of a fair-sized town. Statistical laws of probability ensure that in a system of such dimensions persons of entrepreneurial ability and bent of mind (i.e. the real villains of the piece in matters of innovation) can be represented only by a minute number. The circle of policy-making officials will remain quite an intimate one even when it generously opens its doors to those policy-making non-officials who harbour designs in innovations that simply sweep before them other people's established modes of earning a living. The real draught of competition which Schumpeter describes so vividly as the gale of constructive destruction reaches New Zealand almost exclusively from overseas.

The problems of integrating policies are, therefore, not merely "somewhat eased" by the dimensional effect, but they are radically altered. They become more akin to those relatively simple and manageable issues which Economics discusses under the headings: The Internal Organization of the Firm, and The Organization of an Industry; and they cease to have much in common with those intractable conundrums of statecraft which for instance the Theory of Central Planning pursues. In economics, words have to be carefully adjusted to the size of the things that are being discussed, otherwise one is soon confronted with the gap between theory and practice of which various speakers complained. The import of unsuitable vocabulary into New Zealand merely tends to generate political "smog".

When the independent villains of the piece are absent from the cast and operate from overseas, when a few available specimens of

this genus are for practical purposes members of the policy-making circle that is charged with governmental responsibility, then the drama of Planning simply cannot develop along the orthodox lines of the texts. What does develop under these circumstances is precisely what Messrs. Moriarty and Schmitt so ably describe: the concern of the state with the erection of shelters against *uncontrollable* external blasts.

Mr. Lang is more concerned with life in the huddle behind the windbreaks. Naturally this is not altogether what one might desire. Nobody owes to the people of New Zealand the standard of living they covet, and the signals of the markets, therefore, somehow have to penetrate into the warmth of the shelters although there may be protests. One cannot read Mr. Lang's account of the amazing complexities of four wage determining tribunals without asking the anxious question whether it should not be a judge's task to apply uncontroversial law rather than to give a judicial flavour to the determination of most problematic policies about which he, his colleagues, and everybody else, with good reason, may widely disagree.

With genuine relief one listens, therefore, to the voice of Prof. Simkin who quietly insists that the foremost criterion of civilized life is the Rule of Law, a law "whose application to any case is known beforehand" (p. 126). Administrative decisions on the merits of each particular case may be most enlightened and benevolent; they may be based on the latest up-to-date figures of Social Accounting which Mr. G. E. F. Wood promises to make available soon, and cause great happiness among the millions. But the real issue of government is that of enforcing freedom, and ideally, therefore, the sphere of governmental business which can be tackled only "in terms of intelligent opportunism" (p. 125) should be reduced as far as possible. One hopes that the search among "largely unexplored possibilities of using monetary (and fiscal) policy as a means of stabilizing our economy against changes in overseas prices" (p. 125) will lead to the evolution of methods of government which secure a little more fresh air and elbow-room. One certainly would like to hear more of Prof. Simkin's proposals in this direction.

The editor, Prof. R. S. Parker, has condensed a carefully kept record into a lucid and lively summary of the discussions which is contributed as an introduction.

H. BERNARDELLI

University of Otago.

REVIEWS

Maturity and Stagnation in American Capitalism. By J. Steindl. (Basil Blackwell, Oxford, 1952.) Pp. 248. 30/- stg.

Sometimes the worthy prudence of editors, like the "welfare" proclivities of wives, can be awkward. So it is that the reviewer is faced with the dilemma of keeping within visible distance of 500 words, while reviewing a book (allegedly a *monograph*[1]) which traverses, roughly, the territory of the customary four-year undergraduate course (less international trade, plus rather more notice of the work of Karl Marx than is usually considered decent).

Lest this should be thought an exaggeration, the Table of Contents shows that the book is divided into two parts. Part I, which is entitled "Prices, Costs and Profit Margins", contains the following chapters: The Theory of Imperfect Competition, The Concept of Excess Capacity, Price Rigidity, The Importance of Cost Differentials, The Pattern of Competition with an Industry, Selling Cost and Quality Competition, The Competition of Capital between Industries, and A Study of Profit Margins in U.S. Manufacturing Industry. Part II is concerned with "The Accumulation of Capital" under the following heads: The Internal Accumulation in the Economy as a Whole, The Consequences of Undesired Excess Capacity, The Joint Stock System and the Modern Capital Market, The Accumulation of Capital in the United States, 1869-1939, The Long-run Theory of Investment, and Karl Marx and the Accumulation of Capital.

Clearly, there is something here to interest almost everyone. And that interest will not be disappointed; for Mr. Steindl has poked a stick into many dark corners of economic theory and has succeeded in raising not a little dust. The book abounds with valuable and often novel assaults on many familiar and equally recalcitrant problems. Indeed, as is almost inevitable in a work covering such a broad canvas, the book will, I think, prove more valuable in its parts than in the whole. In this respect, if in no other, it suggests the all-time classic of this type, Hicks' *Value and Capital.* However, in fairness to Mr. Steindl, it should be pointed out that he does not hold out to us that "a new and penetrating light descends on the spectacle . . .". He says: "In order to deal with the stagnation problem I have been constrained to elaborate a theory of long run growth of my own. Nobody will expect this to be very smooth going. I am much aware of the tremendous shortcomings, both in substance and presentation,

1. This is the fourth of a series of monographs published by the Oxford Institute of Statistics. Mr. Steindl will be recalled as the author of *Large and Small Business*, the first volume in the series.

of my solution" (p. vi). Having essayed this task, with an evidently tremendous outlay of sweat and tears, nothing could be more disarming than the author's conclusion that his model does not work. (Many pioneer models don't, of course!) "Having experimented with my model quite a lot . . .", he says, "It is fairly difficult to explain . . . moderate rates of growth, such as have been observed in reality in the history of capitalism, that is, annual rates of growth not exceeding about 5 per cent." (p. 226).

Mr. Steindl then is a "stagnationist". "I shall make no bones about my own prejudice. I do not believe stagnation was a historical accident; I think it resulted from changes in the working of the United States economy which had been going on for a good length of time before they became apparent." But he is not a stagnationist in the Hansen tradition which sees economic maturity as the consequence of declining population growth, the contraction of the territorial frontier, the passing of the stage of great capital-using innovations, and so on. "I personally feel that this type of approach offers little hope." "These are factors which may just as plausibly have been effects as causes . . ." (p. vi). Mr. Steindl is therefore concerned to construct an *endogenous* theory of secular stagnation.

Very, very broadly, this theory is as follows: Fundamentally, entrepreneurs invest because they have saved in the past. Two main factors determine the rate at which investment will be undertaken. The first is the relative indebtedness of business. The greater the internal savings of business in relation to external indebtedness, the greater the inducement to invest. In this aspect, Mr. Steindl's theory represents a systematic application of Kalecki's well-known "Principle of Increasing Risk". The second determinant of investment activity is the degree of utilization of capacity. Here, too, we are provided with a systematic application of a familiar idea, namely that excess capacity inhibits investment.

For purposes of exposition, Steindl divides the economy into two sectors: (i) the monopolistic or oligopolistic; and (ii) the competitive. The former sector is characterized by monopoly profits, inelastic profit margins, and great difficulty in eliminating excess capacity. The competitive sector earns precarious profits, margins are flexible, and surplus capacity is readily forced out. The primary check to investment comes about as follows: Total profits, a la Kalecki, are equal to investment plus capitalists' consumption. Then, with a given rate of growth (investment), an increased share of profits accruing to the monopoly sector involves a reduced rate of profit in the competitive sector. Thus, as the importance of the monopoly sector increases, internal accumulation in the competitive sector is reduced and thereby the rate of investment. This reduction in invest-

ment cannot be offset by more investment in the monopoly sector, because in this sector the marginal rate of profit is very low or even negative.

For well-accepted reasons, a check to the rate of investment results in the appearance of undesired excess capacity. In a more competitive regime this excess capacity would soon be eliminated by price-cutting and the forcing out of marginal firms, thus re-creating the conditions for further advance. But with the existence of widespread monopoly and oligopoly, as in latter-day America, this mechanism does not operate. In the monopoly sector, profit margins are inflexible, or may even rise, in the face of a fall in demand; and the excess capacity remains. Firms in this position attempt to eliminate the unwanted excess capacity by slowing up their rate of new investment, which for the economy as a whole is disastrous. The result is further excess capacity and lesser opportunities for internal accumulation and, hence, investment in the competitive sector. And so on. Stagnation is upon us.

Mr. Steindl's book positively invites discussion at many points. Here I can only refer to two matters of the most general nature. Firstly, it seems to me that Mr. Steindl is being unnecessarily purist in insisting upon a purely endogenous theory of economic development. After all, what *is* considered "endogenous" is purely arbitrary or, at best, conventional. One cannot help but feel that his main thesis would be a much sturdier structure if reinforced from "without"—even at the expense of artificially tight algebraic relationships.

The second point concerns his relative neglect of the trade cycle. He does indeed admit this as a weakness of his model. By my point is not concerned with the formal completeness or elegance of a model. In spite of weighty econometric precedents, it seems to me that attempts to resolve economic development into two components, viz. "the cycle" and "the trend", are fallacious. The basic question is this: does there exist a growth trend which is *independent* of the course of cyclical movement, a trend from which cyclical fluctuations may be looked upon as deviations? Or is the trend itself determined by the course and nature of the cyclical movements? Space does not permit this important question to be argued here; but I do think it worth recalling Maurice Dobb's assessment of Marx's approach to this problem. He says: "Marx clearly regarded crises, not as incidental departures from a predetermined equilibrium, not as fickle wanderings from an established path of development to which there would be a submissive return, but rather as themselves a dominant form of movement which forged and shaped the development of capitalist society. To study crises was *ipso facto* to study the dynamics of the system . . ." (*Political Economy and Capitalism*, p. 80).

The richness and variety of this book have already been alluded to. The presentation also provides for diverse tastes. Those who prefer to take their economics in English can feel reassured that Mr. Steindl, the disciple, makes more use of that language than the master, Michal Kalecki. The more hardy souls are also provided with appropriately ascetic fare. For example, Steindl's model of long-run investment may be had "in seven equations in seven variables", with thirteen "structural coefficients" thrown in. However, as with Kalecki, there is a leavening of interesting empirical material. Indeed, not the least valuable part of the book for Australians, who often experience difficulty in getting at primary sources, is the forty tables of empirical data relating to the U.S. economy.

To sum up: all economists will wand to read this book—even those who, either from caution or commonsense, have retired into economic history.

RON HIESER

The Propensity to Monopolize. By L. J. Zimmerman. (North-Holland Publishing Co., Amsterdam, 1952.) Pp. v + 100. 15/- stg.

This short but stimulating book is an original contribution to the theory of monopoly, seeking to explain why monopolies arise and in the course of this explanation providing economic justification for their existence.

Although based on the assumption that business men (and industries) seek to maximise their long term average profits, the existence of tacit and overt agreements and quality variation is not glossed over. "On the contrary it is exactly those agreements which are the main topic of the book." Zimmerman's objective is to determine whether economists can, by analysing the objective facts of a market, indicate the strength of any tendency towards monopolization of the market.

Having assumed business men and industries seek to maximise long run average profits we have to determine the market conditions (in particular the elasticities of supply and demand) which will require a monopolistic organization of the market in order to maximise these long run average profits. According to this thesis the most profitable form will vary (from monopoly to competition) according to the value of the elasticities of supply and demand. It is the tendency towards organizing any given market on a monopolistic basis which is "the propensity to monopolize". This leads to the challenging claim that monopolies tend to be established only in those market situations where existing conditions (i.e. existing elasticities of supply and demand) indicate that a monopoly will maximise

the industries' long run average profit. This then is where the departure from existing theory occurs. Zimmerman holds that monopolies (apart from "natural" monopolies) are only created when the necessary elasticities of supply and demand exist already. They are not created in order to influence the elasticities simply to offset their (harmful) effects.

The propensity to monopolize is measured by the formula: $\frac{Es}{Ed}$, where Es = elasticity of supply and Ed = elasticity of demand. This is, as the author points out, a development of Triffin's market classification.

Under normal conditions, this value will be positive, and may vary from zero to infinity with various values of Es and Ed. In other words, when Es increases and/or Ed decreases, then the propensity to monopolize increases. Thus as industries with these characteristics become increasingly prominent in our economy, we must expect increasing monopolistic tendencies in our markets. This, of course, appears to fit the facts of economic development, but much investigation is required.

The objective, then, is to show that it is neither the numbers in the market nor the quality of the product which determine the propensity to monopolize, but the Es and Ed. Where the conditions of elasticity of supply and demand are such as to render the (unorganized) market liable to extreme fluctuations in price, then the propensity to monopolize has a high value. This step unites the theory of market structures and the theory of price.

This thesis provides an economic justification for monopoly in particular cases and also a case for government organization of those markets which, while suffering chaotic fluctuations of price, due to the value of Es and Ed, cannot be organized by producers themselves owing to large numbers of producers or the nature of the product. Such organization is, of course, to the benefit of the consumer as well as producer, and is best illustrated by certain agricultural products. This means that while accepting "free enterprise" we must be prepared to accept monopolistic market structures in some sectors, not alone from the industry point of view, but also for the sake of economic stability and the long run benefit of the community.

The theory, after an all too brief application to price theory, is extended into the field of business cycle theory. Here a logical explanation of Keynes' changing views on the relative value of monetary policy and government spending is very ingeniously developed. In any period the relevant policy depends largely on the elasticity of supply of investment funds and the elasticity of the investment demand schedule, with regard to the rate of interest.

Zimmerman states that Keynes' views only changed in response to changing values of these elasticities. The same argument throws light on the dispute between Keynes (of the *General Theory*) and the propounders of the classical theory.

This is a valuable book, the central scheme of which justifies a more complete treatment than it has received. As Zimmerman realizes the statistical basis leaves much to be done, but the thesis is of such interest that it appears to justify considerable empirical investigation.

A. R. Prowse

Comparative Economic Systems. By T. Suranyi-Unger. (McGraw-Hill, New York, 1952.) Pp. x + 28. $5.50.

This book, so its author says, is for the university student who has had a basic course in the principles of economics and for the general reader with some experience and interest in economic problems. Like most American texts, it is a massive book, encyclopaedic in scope and meticulous in presentation. There are summaries, review questions, and suggested readings at the end of each chapter. But unlike most American texts, it seeks to be original. Professor Suranyi-Unger's primary aim has been to write a text-book, but his secondary purpose has been to conduct a proselytizing campaign against the usual treatment of comparative economic systems. Herein lie the book's strength and weakness. The result is a book which is rather too controversial and too dogmatic in parts to make an ideal text-book, and too cluttered with undergraduate-type amplification and supplementation of the basic thesis to win converts. Yet Professor Suranyi-Unger has done a valuable service in writing this book.

The book is in three parts. Part One (which takes about 100 pages) is entitled Economic Systems in Operation. Here the author states his thesis, namely, that emphasis on sharp contrasts between such systems as capitalism and communism is both false and dangerous, that these extreme types of economic system are in a constant state of change and development, that there is considerable mutual overlapping, and that there are many intermediate types of economic system. Professor Suranyi-Unger says, "economic postulates of co-ordination and forgiveness have been substituted for those of hostility and vindictiveness".

Part Two (which takes about the next 200 pages) is entitled Social Premises and attempts to analyse the social factors underlying economic systems with a view to comparing and contrasting "Western Freedom" and "Eastern Planning". This section of the book draws heavily on history, ethics, sociology, ethnology, politics,

law, geography, and strategy. The central aim seems to be to document the thesis set out in Part One, to emphasize the constant change in economic systems and to establish a progressive narrowing of the differences between extreme types.

Part Three (which takes the remaining 300 odd pages) is entitled Economic Analysis, and appears to be a rewriting of elementary economics so as to relate it more closely to the central theme of the book. Here there is discussion of private enterprise and collective economic planning, and the relative amounts of these are used as a basis for comparing and contrasting different economic systems.

In this book, therefore, Professor Suranyi-Unger has drawn on the whole of social science to support an interesting thesis. The central theme does not strike one as being particularly original (though it may seem novel in comparison with the usual treatment of comparative economic systems) but it is certainly plausible and comforting. However, it leaves room for much controversy, but then Professor Suranyi-Unger is dealing with a controversial subject. One gets the impression that the thesis happens to be a convenient hallstand on which to hang the bits and pieces that make up a course on comparative economic systems, and that Professor Suranyi-Unger has done a good job at making the hallstand look neat and tidy. But his experiment results in a new mixture; he has not succeeded in synthesizing a new compound. The book leaves one wondering what average young undergraduates will get out of it. One would hate to think that they swallowed it whole!

G. A. J. SIMPSON-LEE

The Theory of Economic Policy in English Classical Political Economy. By Lionel Robbins. (Macmillan & Co., London, 1952.) Pp. xii + 217. 15/- stg.

By "the theory of economic policy", Professor Robbins means neither what is involved in the welfare theorists' formal methodology of prescription (which the classical economists left to an idler and more self-conscious generation), nor what Professor Meade means when he measures the scope of the various instruments of policy in terms of its objectives (though this sort of analysis was indeed a substantial part of classical economics); he means "the general body of principles of governmental action or inaction—the *agenda* or *non-agenda* of the State as Bentham called them—in regard to economic activity". These principles he surveys as they appear in the works of the classical school from David Hume to John Stuart Mill.

The book is based on lectures given at London and Manchester. The first three lectures consider the classical attitude towards "the

system of economic freedom", "the economic functions of the State", and "the condition of the people" respectively. Then two lectures are devoted to the "classical economists and socialism" (the second a detailed discussion of Mill's changing views). A final lecture attempts a more general assessment of the classical position "in the broad perspective of the history of social philosophy".

This is an essay—as Robbins insists—not in economics or in politics, but in the history of economic and political thought. It covers familiar territory, in which new discoveries are not to be expected. To a considerable extent, it is addressed to the non-specialist, who is supposed to cherish the curious illusion that the English classical economists can be identified with the doctrine of *laissez-faire* and with the defence of subsistence wages. Their positive attitudes towards the functions of the State and towards the conditions of progress in popular living standards are therefore underlined. Yet the specialist too will find good reading on almost every page—even if the highest emotion he can feel is admiration for Robbins' treatment of his material, which should stand as a model in the handling of quotations and references. (Incidentally, it is pleasant to see Hume given for once his rightful place in economic thought.)

Robbins has (I think) achieved the elusive triumph of the portrait-painter's art, to catch the very soul and twinkle of his subject so that his friends know him better on the canvas than in the flesh. As with most portraits, success reflects the personality of the subject as well as the skill of the painter. Robbins is dealing with a group of men who for some purposes can be labelled as "economists", but whose work illustrates in its highest form that utilitarian spirit of reasonableness and realism, as opposed to doctrine and sentimentality, which is probably the most distinctive English (or Scotch) contribution to social thought. "Though they made jokes about him in private and denounced his ideas in public, their attitude was always essentially friendly." Here, in Robbins' description of the relations between the Ricardian circle and Robert Owen, is the epitome and perhaps the epitaph of a whole system of social philosophy.

T. W. SWAN

The Development of Economic Thought. Ed. by H. W. Spiegel. (John Wiley & Sons, 1952.) Pp. 811. $6.50.

This book is an interesting variation in the field of collected economic writings. Professor Spiegel has brought together a number of essays which tell an "inside the family" story—what economists think of each other. The essays, arranged in chronological order from Aristotle to Pigou, are grouped into six sections with the following headings: The Dawn of Economic Science, The Classical

School, Socialists and Reformers, Historical and Institutional Approaches, The Rise of Marginalism, and The Growth of Modern Economics. Here is a sample of the contents. The Classical School heading groups essays by Douglas on Smith; Bonar, Fay and Keynes on Malthus; McCulloch on Ricardo; Marshall on Ricardo; Mill on Bentham; Viner on Bentham and Mill; Cairnes on Bastiat; and List on Say. In the section The Rise of Marginalism, we have Schneider on Thünen; Fisher on Cournot; Walras on Gossen; Keynes on Jevons; Hayek on Menger; Hayek on Wieser; Schumpeter on Böhm-Bawerk; Hicks on Walras; and J. M. Clark on J. B. Clark.

Most of the essays have been published before, but a few have been revised, some translated, and three are brand new, viz., Frisch on Wicksell, J. M. Clark on J. B. Clark, and Colin Clark on Pigou. Of these the article by Frisch on Wicksell is outstanding. We get as much of Frisch as we do of Wicksell and a great deal of both. This combination makes for some rewarding (but not easy) reading. Colin Clark on Pigou is unique in the collection since it is the only appraisal of a living economist and, as might be expected, is rather tentative.

There can be no doubt that this is an extremely useful collection of essays in the development of economic thought. Many of the studies appeared originally in relatively obscure sources, and having these brought together for reference will be of great help in the study of this subject.

As far as the "general reader of economic literature" is concerned, I would hesitate to recommend this book without the warning that these are *selected* studies and therefore cannot provide an adequate survey of "progress" in the development of economic thought. In the first instance the editor's choice is restricted (perhaps unavoidably) to, in most cases, a single article on each economist. Therefore, the coverage of what are often controversial questions is extremely narrow. Secondly, there is an unevenness in the quality of the studies. The appraisals of the Classical School, e.g., are relatively superficial when compared with those of the Marginalists. McCulloch and Marshall on Ricardo hardly do justice to the ideas that emanated from that economic theorist. The centenary lectures of Bonar, Fay and Keynes do not tell us much about Malthus' contributions, while List on Say throws no light on the development of economic thought although it may be interesting for other purposes. Compare these with Schneider on Thünen, Keynes on Jevons and Hicks on Walras. This is perhaps an inevitable feature of a book of this form.

These weaknesses rob the book of its value as a survey of the development of economic thought implied by the title. However,

this does not detract from its value as a collection of individual essays particularly useful to the student of the history of economic ideas.

It is unfortunate the editor felt that "The justification of each selection would make a long story, too long and too tedious to be told here" (p. ix). Long, perhaps, but certainly not tedious. It would have been of considerable assistance to the discriminating reader to know what rules governed the selection of the particular studies. It is, of course, impossible, in a book such as this, to include everyone who wrote on economic problems, but two glaring omissions occur to me; nobody on Sombart and nobody on Fisher.

Reading through the essays in this collection strongly confirms a previous impression that the "best" commentators on the development of economic thought are those who have themselves contributed to it.

S. E. CHERNICK

The Works and Correspondence of David Ricardo. Edited by Piero Sraffa with the collaboration of M. H. Dobb. Vols. VI-IX, *Letters, 1810-21.* (Cambridge University Press, 1952.) Pp. xli + 353; ix + 387; lx + 403; lx + 401. 24/- stg. each.

These four volumes will long continue to provide many footnotes, paragraphs and even essays for historians of economic thought, and of English social and political life in the second decade of the nineteenth century. They cannot be "reviewed" in brief; even the ten-page article by Mr. Hutchison (*Economica*, August 1953) merely outlines the interest and variety of their contents for many different kinds of historians. Their publication is a major event in the history of ideas. All that need be done here is to indicate what the reader will find in them.

There are 555 letters from or to Ricardo, of which 317 are published for the first time. Most of the new letters come from two sources: the "Ricardo Papers" found at Bromesberrow Place (formerly the house of Ricardo's son Osman) in 1930; and the "Mill-Ricardo Papers" found in Ireland in 1943. The former contained letters to Ricardo from Malthus, James Mill, McCulloch, Say, Trower and others; the latter, Ricardo's letters to James Mill, together with other unpublished Ricardian manuscripts. The arrangement of this vast collection is chronological, and the reader gets a vivid impression of Ricardo's industry as the series pours in and is answered—the practical affairs and social or domestic gossip attended to, then down to the discussion (the eternal discussion) of wages, profits and rents, and the measure of value. All this—what often amounts to essay after essay—was only a sideline in the life of a busy and prominent man of affairs.

It was hardly to be expected that there would be any striking revelation of new or modified Ricardian doctrines, since we have long had most of the letters to Malthus covering the whole period, and the third edition of the *Principles* was published in 1821, the year of Ricardo's death. There are some important modifications now to be made in the chronology of the development of Ricardo's ideas (partly a result of misdating in Bonar's edition of the letters to Malthus); and there are many variations in exposition out of which commentators may piece together the *true* Ricardian doctrine on disputed points. But the greatest interest, from a first and therefore superficial reading, appears to arise less from precise matters of doctrine than from the light thrown on Ricardo's general intellectual history and attitudes of mind.

The influence of James Mill turns out to be profound—not in the formation of ideas, but in persuading Ricardo that he could by application learn to write, that he must publish a book, that he must go into Parliament. The somewhat arch, but extremely literate flow of letters from Mill is always urging Ricardo to new tasks; beneath the banter the acceptance of the master and pupil relationship is serious. One even finds Ricardo imitating, in a manner slightly uncomfortable to the reader, the "literary" archness of his mentor (e.g., Vol. VI, p. 51; Vol. VIII, p. 60).

Malthus's side of the famous correspondence (now first published) leaves one with mixed feelings, and on the whole with some sympathy for him. Ricardo will *never* accept Malthus's view when they differ; and no doubt generally he was right, for Malthus did get muddled. But the latter, if in a blundering way, had glimpses of matters which never seemed to worry Ricardo. It was the clergyman-professor, not the business man, who wrote: ". . . I really think that the progress of society consists of irregular movements, and that to omit the consideration of causes which for eight or ten years will give a great *stimulus* to production and population, or a great *check* to them, is to omit the causes of the wealth and poverty of nations—the grand object of all enquiries in Political Economy." (Vol. VIII, p. 122.)

These volumes complete the Works of David Ricardo, for which Mr. Sraffa began collecting material over twenty years ago. They are to be followed by a Biographical volume and a general index. Mr. Sraffa (with whom Mr. Dobb collaborated in the later stages of his task) has set an example of editorial scholarship, modest and exact, which may conceivably be equalled but which cannot be surpassed, for it is as perfect as the nature of human frailty will permit.

J. A. La Nauze

Hermann Heinrich Gossen 1810-1858. Ein Wegbereiter der modernen ökonomischen Theorie (A Pioneer of Modern Economic Theory). By Hermann Riedle. (P. G. Keller, Winterthur, 1953.) Pp. 137. 12 Swiss Francs.

The book under review is a commentary on Gossen's only work published in German under the clumsy title: "Entwicklung der Gesetze des menschlichen Verkehrs und der daraus fliessenden Regeln fur menschliches Handeln" (Development of the laws of human intercourse and the rules of human action resulting from them). That work was indeed much more significant as a forerunner of the subjective theory of value and its mathematical variety than the rather incidental remarks in the works of the English economists Jennings, Longfield and Lloyd and the French writers Condillac, Augustin Walras, Dupuit and Cournot, but was completely neglected by its contemporaries and very nearly fell into complete oblivion. Gossen, like Jevons, the Austrian and the Lausanne school (Leon Walras) contemplated economic action independent of historical conditions, so differing from the German historical school, from Marxism and the American institutionalists. It is pure theory and a theory of equilibrium positions.

The author divides his book into two parts: Gossen's theory of individual economy and that of social economy. The first part deals with the economy of the isolated individual whose aim is the maximization of enjoyment. The first of Gossen's laws (diminishing enjoyment with the repetition of the same enjoyment), based on psychological grounds, and the objections raised by various critics, are discussed in detail. This law is in modern terminology the law of diminishing satisfaction or increasing satiation, of diminishing marginal utility or increasing rate of substitution. The scarcity of goods available is for Gossen a result of the shortage of time for the enjoyment at the disposal of the individual. From this Gossen deduces his second law that the degree of each enjoyment at the moment when the satisfaction of a want is broken off, is equal (equi-marginal utility). The third law of Gossen that the total of enjoyment is increased when a new enjoyment is discovered or a previously known enjoyment is extended, is only a consequence of the first law. The reverse side of the first law is the law of increasing pain (disutility) and the finally resulting subjective welfare is negatively affected by this disutility. In the third chapter on value the author stresses the connection between value, satisfaction of wants and utility. Gossen divides goods into consumption goods, complementary goods and production goods, and develops the rudiments of a theory of imputation in Wieser's sense. The maximum of enjoyment, the equili-

brium position of the individual, is reached when marginal utility equals marginal disutility (pain of labour).

In his second part the author examines Gossen's treatment of exchange (barter) where Gossen only considers two individuals who exchange two kinds of goods, and, therefore, does not come to exchange equations like Jevons, the Austrians and Walras. Gossen fails to achieve any co-ordination between value and price, distribution, rent (which he interprets as differential rent), rent of consumption (consumer's surplus), welfare (measure of enjoyments, scale of marginal utilities), economic progress. In his opinions on economic policy Gossen stresses the state's task of securing free competition of labour, mobility of capital for small entrepreneurs by way of loans to be provided by district banks, acquisition of all real property by the state without expropriation, and leases of property to farmers, as the way to combat frictional unemployment.

As a thorough commentary on Gossen's work with the aim of inducing more economists to read it, Dr. Riedle's book is to be commended. What he does not try to explain is the curious fact that Gossen's book was, despite its undoubted originality, so completely ignored by its contemporaries. That Gossen is repellently mathematical, as Alexander Gray says, is by no means correct. On the contrary, Gossen uses very simple algebraic formulae and two-dimensional diagrams with straight lines only. More justified is Gray's criticism that he is chaotic. Very different from the brevity which is the soul of wit of the English, and from the lucidity of the Latin languages, the German scientific style and even to some extent German fiction (Thomas Mann) has since Kant been marred by very involved, long-winded sentences which make the reader forget the beginning of a sentence when he comes to its end. This is well known to the reader of Hegel or Marx and makes the latter particularly so very hard to understand in the German original. Gossen carries this fault to the extreme and makes the reading of his book a very arduous task indeed. This certainly very largely accounts for its failure to impress contemporary readers.

F. SCHNIERER

Socialist Thought : The Forerunners 1789-1850. By G. D. H. Cole. (Macmillan, London, 1953.) Pp. 332.

This first volume of *A History of Socialist Thought* commands respect as a series of essays on early socialists and their respective contributions to the body of socialist doctrine. The choice of characters is judicious, conforming on the whole to popular usage but flexible enough to allow the inclusion of outsiders like Lammenais and Mazzini. Disapproval of the competitive spirit of industrial capitalism is the main condition of selection. The socialist movements considered

are those of France, Great Britain and Germany. Of the three the study of German socialism is the most coherent although the discussion of Marxism is not carried beyond 1850. Socialism in Great Britain prior to 1850, as described here, is much less a study of people than of popular movements.

Knowing that Professor Cole is playing on the home ground, some may turn to this book for a definitive study of the development of socialist ideas in the early nineteenth century. Their expectations, however, are not likely to be realized partly for the obvious reason that it is difficult for one versed in modern economics to come to grips with socialists in a period when their ideas were predominantly utopian. The chapter on Marxism to 1850, while it will annoy more sophisticated Marxists and non-Marxists alike, shows that the author is more at home when dissecting the odd "realist" who comes his way. But the real disappointment from the point of view of scholarship is not the diffidence the author may have felt in the presence of the utopians, but rather his failure to indicate directly the basis of his interpretations of what they said. The reader is left in the exasperating position of having to take Professor Cole on trust or plough through the works cited in the bibliography which, while excellent in itself, is not suited to this purpose. Even direct quotations are cited without reference to their sources. Nevertheless, if his nervous system is strong enough to withstand these shocks, the reader will find compensation in the refreshingly incisive style one has come to expect from Professor Cole. The book can be recommended to those for whom early socialist thought is uncharted territory as one hardened explorer's account of the terrain to be encountered.

W. A. SINCLAIR

A Guide to Keynes. By Alvin H. Hansen. (McGraw-Hill, New York, 1953.) Pp. xiv + 237. $3.75.

The object of this, the eighth in the Economic Handbook Series edited by Seymour Harris, is "to induce the student to read, and help him to understand Keynes. The *General Theory* and the present volume can therefore conveniently be read side by side" (p. xiv). Professor Hansen deserves to succeed in his object. This book is written in a lucid and pleasing style. The comments on Keynes's errors, as well as on his achievements, are frank and to the point. A genuine effort is made to set the *General Theory* in historical perspective in order to explain the rather peculiar arrangement of the work. In the process Hansen succeeds admirably in giving the undergraduate student some insight into the reasons why economists, a mere twenty years ago, had failed to grasp clearly some of the fundamental structural characteristics of modern capitalism.

A Guide to Keynes follows the layout of the *General Theory* and is thus divided into six books. It is written as a running commentary and it is no mean feat to have done this with so little duplication. References to the literature are useful, though not numerous. It is perhaps inevitable in the leading American apostle of Keynesian doctrine that so high a percentage of footnote references should be to the author's work. However, the references will lead the student on to most of the important controversies which raged after 1936. The major exception to this is Hansen's failure to give space to the research of the Oxford group and others on (to put it bluntly) the unimportance of the interest rate.

This reviewer initially viewed askance the notion of "a guide to Keynes". Professor Hansen has, however, written a book which should be popular with students and will certainly be used for class-work by teachers in aggregative analysis.

BURGESS CAMERON

The Government and the People, 1939-41. By Paul Hasluck. (Australian War Memorial, Canberra, 1953.) Pp. xvii + 644. 25/- (Aust.).

Though one expects definitive history from official war historians as little as art from official war artists, even the plainest tale from the files cannot fail to be highly instructive. Perhaps the major surprises in Mr. Hasluck's first volume on the politics of the war are the sophistication of Australia's brief at the 1937 Commonwealth conference, and, in the first two years of the war, the importance of the role of the Advisory War Council, and the utterly reactive character of the Australian war effort—in relation to British as to enemy policy.

Mr. Hasluck has arranged his material with considerable skill and tact, and has brought to the writing narrative gifts of a very high order. His qualities as a historian are best shown by three sections of this volume: the long and patient introductory chapter dealing with defence and foreign policy between the wars (though the equivalent chapter in Mansergh, *Survey of the British Commonwealth,* Vol. III, remains of value), the racy and succinct summaries of the strategic appreciations supplied in a constant stream to War Cabinet and the Advisory Council, and, finally, the close and exact analysis of parliamentary mood and intrigue throughout the period.

These very successes, however, are not unrelated to certain obvious defects in design and arrangement. While we may allow Mr. Hasluck's freedom to decide that the "social" in the phrase "political and social history" should be entirely redundant, and can only register regret and disagreement with the argument that

materials are lacking, the author's view of what "politics" means in this context is crucial. And Mr. Hasluck has a rather narrow view of politics. Not only is it something done mainly by a party and parliamentary élite, so that his periodic notes on the state of public opinion tend to be merely lists of disembodied possible "views", but it is amazingly easily separable from economics and administration. The division between the political and economic volumes was no doubt always present in the author's mind; but one of the reasons why the sustained defence of Mr. Menzies as a war leader, which one may call a leading theme of this narrative, has the strained air it does, is precisely that we are never shown high strategy working down to concrete economic plans. That his account of the development of the whole wartime bureaucracy should be reserved for an awkward last-minute "Digression" follows not only from his very curious, indeed, indefensible, fiction of cabinet unanimity, but also from the same marked disinclination to follow policies beyond cabinet room blotters. Earlier reviewers have remarked on Mr. Hasluck's valiant struggles with his political bias. It is so large and fine and free as to be for most readers self-correcting.

In this brief review which alone is appropriate in an economic journal one's comments must necessarily be terse. But it should be stated emphatically that this is an important book, full of matter of close and urgent interest to those who remember the approach and outbreak of war.

A. F. DAVIES

Contracts and Finance. By W. Ashworth. History of the Second World War : U.K. Civil Series, edited by W. Hancock. War Production Series, directed by M. M. Postan. (London, H.M.S.O. and Longmans, 1953.) Pp. x + 309. 22/6 stg.

Contracts and Finance is a well-written, detailed and closely-documented account of the nature of contracts made between U.K. war departments and firms supplying war equipment, and the arrangements made for the provision of working and fixed capital for these firms.

Firstly the modification of the usual Parliamentary procedure of approval of Estimates to meet the needs of rearmament is described. Mr. Ashworth shows that flexibility in the procedure of financing war departments expenditure was quickly achieved and that "the old charge that Treasury control was a major source of delay could not be substantiated during the war" (p. 17).

In the chapters on contractual procedure between the war departments and contractors, the sections of most general interest to economists are those dealing with price negotiations. For most

contracts there were single tenders only, and so price fixing principles had to be developed. The difficulties of fixing prices before production, and the problems of the different forms of pricing based upon costs are described in detail. Great emphasis was placed upon keeping profits at a "fair and reasonable" level. In some cases prices were tied to profits—e.g. where contractors were required to give rebates on prices negotiated if their profits exceeded a certain level. In other cases, e.g. coal and iron and steel, the production of inefficient producers was maintained by subsidies rather than by increasing the price for the product as a whole, which course would have increased the profits of the more efficient.

The final chapters show how the Departments came to provide most of the new fixed capital and a large part of the working capital of non-Government firms engaged in war production. This was inevitable in view of the size of the investment needed and the uncertainty of its value in peace-time; but the provision of Government funds to private firms involved entirely new problems and procedures.

Most economists will be disappointed that there is no general discussion of such questions as—how did the control of contract prices fit into the general policy of resource control?; were the pricing policies used the most effective in stimulating efficient production? was the level of profits allowed excessive? and so on. In his final chapter Mr. Ashworth poses, without any lengthy discussion, such questions as, "whether it was possible to lower the general level of payments for war production" and whether "much more could have been done by financial means alone to increase the permanent efficiency of industry". This book is, however, but one of a series of the history of war production, and whilst the author states in his introduction that "policies affecting the receipts of producers of so many types of goods throughout the war could not fail to have an important influence on the economic structure", he goes on to say that "to discover what that influence was . . . would be a major investigation in itself and lies beyond the scope of the present book". Without this discussion of wider issues the book, though an excellent account in its restricted field, will be of interest to a much smaller number of economists than a book discussing wider questions.

R. WALLACE

The Future of Nationalization. By H. A. Clegg and T. E. Chester. (Basil Blackwell, Oxford.) Pp. 211. 12/6 stg.

This is a competent and welcome study of the nationalized industries in Great Britain. It is not a detailed technical study of each industry. Rather, it is a study of the organizational problems of large-scale public enterprise. The book is based on the idea that

there were some sound economic arguments in favour of nationalization but wrong techniques of organization are responsible for these potential economic gains not being realized.

The first chapter discusses the question "Why Nationalization?" The reasons are discussed under the headings of the doctrinaire and pragmatic approaches. The authors seem to favour the pragmatic approach and, with one exception, generally seem to approve the act of nationalization of industries as carried out in the post-1945 period. The one exception is, of course, the steel industry.

"Steel then is an exception because there was no general agreement, fostered by public inquiries and reports, that essential development could not be carried out without compulsory reorganization of the industry. The technical needs of the industry and the means of meeting them were not laid down in the report of a Royal Commission or a Departmental Committee, but in a report prepared by the Iron and Steel Federation itself, and accepted by the government. It was exceptional in that, by commercial standards, it was doing very well indeed. It was not hampered by the volume of regulations which in gas and electricity made nationalization seem a means of gaining liberty of action. It was not, like the coal industry, patently failing to supply the nation's needs. It most certainly refrained from washing its dirty linen in public as the transport industry was prone to do. Large sections of the gas and electricity industry and of road passenger transport were already publicly owned by local authorities. The railways and the mines had been operated by the government during the two wars. The steel industry was unquestionably private industry, and steel employers and managers showed quite clearly that they wished it to remain private. There was less of the pragmatic approach to steel than in any other instance of nationalization, but steel nationalization was a conflict between socialism and capitalism far more than were they." (Pp. 39-40.)

Chapter two is a survey of the organization of each of the nationalized industries and chapter three discusses the problems of organization.

The meat of the whole essay is contained in chapter four, which discusses the reorganization of the nationalized industries. For the authors are advocating reforms: "Over the last few years, however, nationalization has fallen into disrepute. The reason for this is not anything inherent in nationalization itself, but the type of organzation which has been imposed on the industries nationalized since 1945." (P. 207.) Despite many differences in titles and detail, each of the nationalized industries is managed by a central board with area boards and sub-area boards and districts.

"In our view an arrangement of this kind must result in overcentralization for two reasons. The first is that once the central bodies have been given over-all responsibility for their industries by Parliament, those with grievances against subordinate authorities will pursue them to the central body or to the Minister, who will

raise the matter in question with the central body, so that adequate decentralization becomes impossible. The second reason is that if the central bodies have general responsibility, and cannot judge their subordinates by the test of profitability, they must construct their organizations on what we have called the 'span of control' pattern. To allow each superior officer or board to exercise full control over his subordinates, he must maintain personal contact with them and have personal knowledge of the work. Accordingly, the number of subordinates which can be controlled by a single officer or board is closely limited, and a tall pyramid of organization becomes inevitable." (P. 208.)

Messrs. Clegg and Chester are also critical of the fact that the personnel of the central boards need to be supermen, that there is an excess of demand over supply of managerial and technical skill for the nationalized industries and there has been a failure to promote better industrial relations at the local level, and it is difficult for the local manager to take sufficient account of local conditions.

The authors advocate slow and cautious reform. Each central board and area board should be more akin to a holding company, with power to plan development and exercise financial control, while leaving far more autonomy to small local units than at present. The efficiency of each local unit should be mainly judged by its profitability. Each Minister in charge of a nationalized industry should be advised by an independent commission.

Some of the general recommendations may tend to sound like a counsel of perfection. Yet we are all aware of the dangers of excessive bureaucracy in the nationalized industries and we should thank the authors if they have sharpened our awareness of those dangers; they most certainly have given us food for thought a-plenty for the short period since 1945 in which we have experienced large-scale nationalization.

ARNOLD COOK

The Growth and Fluctuation of the British Economy, 1790-1850. Vols. I and II. By A. D. Gayer, W. W. Rostow and Anna J. Schwartz. (Oxford University Press, 1953.) Pp. xxvii + 1,028. 147/-.

It is fashionable, these days, for economists discussing business cycles and economic development to discount the value of general theory and to exhort their colleagues, if not themselves, to develop empirical studies in economic history. That these exhortations have not borne fruit may have implications for the requirements of a good economic historian as for the temperament of theorists. Where these investigations are intended to deal with economic systems as a whole, the task is magnified out of all proportion by the absence of adequate theoretical models, the paucity of appropriate historical

data and the extreme complexity of statistical applications in economics. Pioneers in this field must expect to falter. Equally, they may anticipate rich rewards in the extension and clarification of historical knowledge, the testing and illumination of theoretical systems and the selection and sharpening of statistical tools of analysis.

Some of these rewards are certainly due to Gayer, Rostow and Schwartz in their two-volume study, *The Growth and Fluctuation of the British Economy, 1790-1850.* It is no contradiction to say that these two volumes are likely to be, for a long time, among the most important unread books on economic history. They form a massive attempt at an historical, statistical and theoretical study of one of the most interesting periods of British economic development. Volume I is intended primarily to provide a narrative history of the year by year and month by month changes in the main sectors of the economy; Volume II presents a formalized, abstract interpretation of the business cycle and of long-run trends, concluding, in Part II, with detailed statistical examination of the data used for the main sectors discussed in Volume I. In addition, there is a mass of material, mainly of raw statistics, not presented in the two volumes but available in microfilm as a separate purchase.

The whole discussion is based essentially on some 200 statistical series, supplemented by literary data. It is irrelevant to attempt to criticize the authors on the grounds that they have failed to unearth new information. Indeed, the entirely new indexes of share prices and the revisions of commodity price indexes represent major achievements. But the primary purpose of the study lay in the application of theoretical analysis and statistical tools to available time series, and the organization of the results in narrative form. For the first time, we have available a thorough statistical treatment of the major British series during 1790-1850. This alone is a lasting contribution to our knowledge. Moreover, acceptable or not, Rostow's stylised interpretation of the British business cycle in Part I of Volume II must serve as an illuminating challenge alike to historians and economists interested in this area of research.

Yet I believe that few people are likely to read these books. To some extent this is due to the delays in completion of the whole work which tends, on occasion, to be somewhat dated in its theoretical and statistical approach. But the chief trouble lies in its physical arrangement which makes it difficult to grasp the significance of the detailed course of change in the various segments discussed. For example, Appendix A is logically prior to the whole narrative and statistical discussion; Rostow's interpretations of Part I of Volume II are indispensable in reading the narrative volume; and the skeleton introductions to each narrative chapter provide the general contours

of the whole history. One has to surmount a major obstacle in learning how to approach the volumes if it is to be more than an encyclopaedic reference.

But even when the statistical and theoretical presuppositions are understood and accepted, a serious weakness remains. The volumes purport to be an attempt to study an entire operating economy, their novelty lying essentially in the view of the system as a whole. This claim is not altogether justified. Each narrative chapter divides into very short periods, fixed by the duration of successive cycles. Within each period, we are given detailed discussions of particular segments of the economy, prices, trade, investment, industry and agriculture, etc. These form almost mutually exclusive compartments. There is little suggestion of close interrelation between, e.g. prices and investment, investment and industry, and so forth. Moreover, the various segments scarcely account for a complete system except, possibly, in some vague institutional manner. Certainly the several compartments in no way suggest the historical counterpart of the theoretical model.

This difficulty may be partly explained by Rostow's Part I of Volume II where great stress is placed on foreign trade in explaining British cycles. To accept this would, perhaps, imply acceptance of the layout of the narrative chapters. In fact, the contention in favour of foreign trade as a dominant factor is based almost entirely on the statistical evidence of Part II of Volume II and not on independent literary evidence.

One is brought immediately to an evaluation of the statistical techniques and the interpretation of the statistical results. On these, the volumes stand or fall. Here, one may say simply that both volumes (and not simply Volume II) have all the weakness and the strength of the analysis given in Burns and Mitchell, *Measuring Business Cycles*. The whole narrative, interpretation and statistical analysis depends, therefore, on the comparison of specific and reference business cycles. The value of this procedure depends mainly on the extent to which one wishes to summarize detailed statistical information. The use of quartile averages of ranked relatives in fixing turning points, for instance, can be a useful, relatively simple, summary method. But it is important to realize that this sort of summary may conceal as much as, if not more than, it reveals. One might well insist that the deviations of individual series with respect to each other are as important as deviations of specific and reference cycles.

Reliance on this particular statistical method does seem a weakness of the volumes. The need to use some such techniques arises simply for one reason, the absence of statistical data on properly

defined economic variables, particularly components of social accounts. Until these variables are available, it is probably impossible to make a rational evaluation of the statistical methods. But equally it is impossible to reach any very firm conclusions about causation of the business cycle, whether through foreign trade or not. In the end, as Rostow, at least, eventually admits, interpretation of statistical descriptions is a matter of "faith and imagination", whether in determining the existence of general business cycles or of the relations between specific and reference cycles. It might well be urged, then, that a problematical consistency of movement in an inaccurately measured series possessing an indefinite analytical significance for the economy compared with a rough statistical summary of a miscellany of time series is a weak reed on which to support firm conclusions about the importance of foreign trade in British business cycles. This is pointed up in some of the rigidities of the separate compartments of the narrative history.

A final point is worth noting. A careful search of the narrative sections failed to produce any reference to the word "productivity". Certainly no sections exist discussing the role of technological change. But these volumes deal with what is conventionally regarded as the main period of the British industrial revolution. Fashions in economic history change. But this is carrying "revisions in economic history" a bit too far.

N. G. Butlin

Settlers and Convicts, or Recollections of Sixteen Years' Labour in the Australian Backwoods. By An Emigrant Mechanic. First published 1847. This edition, with a foreword by C. M. H. Clark. (Melbourne University Press, 1953.) Pp. xxxi + 245. 18/6 (Aust.).

James Tucker, Alexander Harris and all. . . . The hunt is on, and good hunting it is too, particularly for the spectators, the reading public. Was James Tucker the author of Ralph Rashleigh? Who was Alexander Harris, the emigrant mechanic? Precisely who these lesser Trollopes were is a fascinating quest; but more immediate to the purpose of this review is the question: Into what category do such works fall—history or fiction?

Professor Clark rightly emphasizes in his foreword that *Settlers and Convicts* appears to contain as much fiction as fact. He quotes some instances of the former, and the reader will have no difficulty in finding other examples. But pretty clearly the author had been cedar-sawyer, had engaged personally in cattle dealing and grazing and had known intimately the Taralga-Crookwell-Goulburn areas, as

well as Sydney and the coastal settlements. The reader may well doubt whether "Harris" became the successful settler described in the latter part of the book: one feels that imagination is getting the upper hand here, and Professor Clark produces evidence to support this view. But nevertheless "Harris" had clearly a very wide range of experience during his sojourn in New South Wales for the sixteen years or so after 1825. Further, he was a very acute observer, not so much of politics as of human relations in a society which was still very far from normal, with its very substantial convict and ex-convict element and with its predominantly male element (particularly in the hinterland). The author is at his worst when he brings the female into his narrative, and at his best describing the utter dependence of human survival in so many situations in the early colony upon mateship.

No, *Settlers and Convicts* cannot be classed strictly as history, economic or social; but for both the economic and social historian it is nevertheless indispensable reading, for despite the flights of fancy it gives the *feel* of that early society. In this sense it is of considerably greater importance than *Rashleigh* and its reproduction is most welcome, not least because it makes available an excellent piece of literature. Whatever the puzzles behind the authorship of the work or the "facts" described therein—and Professor Clark's diligent search to get these straight is to be highly commended—the emigrant mechanic could write, and the book can be read and enjoyed for this quality alone.

"Alexander Harris" may have been "a queer man" as Professor Clark suggests, and his oddities may be all too apparent in his autobiography (first published in 1848). But if "Harris" was fighting the devil of strong drink and suffering torments of the soul during his later years in New South Wales, these things do not obtrude in *Settlers and Convicts* where the author is more concerned with narrative and description than with metaphysics or theology. Amend the sub-title to read "Imaginative recollections . . .", approach the book in this spirit, and it is both informative and thoroughly enjoyable.

W. D. BORRIE

Chartered Banking in Canada. By A. B. Jamieson. (Ryerson Press, Toronto, 1953.) Pp. x + 394. $5.00.

This is a book written primarily for bankers by a banker. Part I, on "Foundations and Development", is considered by the author to be of interest to "the general reader" as well as to the "young Canadian who intended to make banking his life work" (p. vii). Part II, however, "Banking Practice", which "deals with the way in which

banking is carried on in Canada, the different functions performed and with practices and principles which experience has shown it is wise to follow and bear in mind" (p. vii), is clearly designed for readers intending to make a career of banking. As Dr. W. A. Mackintosh says in his foreword, Mr. Jamieson "has brought to his task a rich experience". He began his banking training in Scotland, and spent forty-three years in the service of Canadian banks, mainly the Royal Bank of Canada.

Part I is resolutely historical throughout, with a minimum of interpretation and analysis. It starts at the beginning, with the sentence "Chartered banking in what is now Canada had its beginnings in 1820 and 1822, when the Provinces then existing were separate colonies". It ends 168 pages later with the sentence "the banks presently operating under the Bank Act are as follows . . .". In between lies a highly detailed account of the growth of the Canadian banking system; but the kind of causal explanation and evaluation of this development which would interest economists is almost entirely missing.

Where analysis is attempted at all, it is usually inadequate or wrong. The author reveals the narrowness of his banker's viewpoint in suggesting that the major problem for the banks during World War I was the loss of staff through men joining the services (p. 46). As an indication of the impact of the war on banking organization, he stresses the permanent increase in the number of women on bank payrolls. Like most of his contemporaries who wrote of banking in this period, he shows misunderstanding of the role of bank lending in war finance by describing the purchase of government bonds by the banks as "an essential service" (p. 47). Similarly, he displays the lack of understanding of the distinction between savings and deposits, and of the entire fiscal process, which characterized financiers of the period; he expresses surprise and gratification that the large domestic loans floated by the government resulted in no ultimate decline in bank deposits (p. 49).

The down-swing of 1920-22 is explained in one sentence: "distress selling of inventories brought about a rapid and steep decline of prices" (p. 51). The great depression of the 1930's is also described from a strictly banker's-eye view. The problem of unemployment is seen as one of farmers' inability to repay bank loans and of financial difficulties of municipal and provincial governments as a result of their relief burden (p. 78). The cheap money policy of Great Britain and Canada is cited—perhaps rightly—as a major cause of the recovery after 1932; but the whole process of recovery is dismissed in a single paragraph (p. 83). The impact of the establishment of the Bank of Canada is admitted to have been "timely", but the

enormous role of the Bank of Canada during the war and post-war periods receives little more analysis than the statement that "in four years which intervened before the storm broke, the management of the bank succeeded in setting up the organization and establishment of policies which enabled it to play a much more conspicuous part on the financial side of the war, which brought forth many high tributes". The dramatic story of Canadian foreign exchange policy during and since the war is not told, and the great success of the bold policy of setting the Canadian dollar free in December of 1951 receives no more attention than the simple statement that since then "residents of this country will again be able to acquire and use (foreign) exchange at their pleasure" (p. 331).

An inadequacy so pronounced as to border on error is the discussion of Central Bank policy since the war. The role of the Bank of Canada in the government's efforts to stabilize the Canadian economy, a history which throws much light on the efficacy of fiscal and monetary policy, separately or in unison, is dismissed with a few factual statements. For example, the author entirely misses the point that the agreement of February 27, 1946, under which the banks undertook to limit their holdings of Canadian government bonds to 90% of their savings deposits, was the first in a series of steps by which the Canadian government abandoned its cheap money policy after the war, a policy move of great analytical and practical interest (p. 149).

In the opinion of the reviewer, the greatest analytical error is the implication that inflationary finance, made possible by the note circulation privilege of Canadian banks prior to the establishment of the Bank of Canada, facilitated the economic development of Canada, especially in the nineteenth century. It is the reviewer's firm conviction, from recent study in presently under-developed countries, that inflation retards rather than encourages expansion, by making investment in trade more attractive than investment in productive enterprises.

However, it is perhaps unfair to criticize a book for failing to be something it never tried to be. This book is certainly not a penetrating analysis of the interplay of banking policy and legislation on the one hand and economic fluctuations and development on the other. The field remains open for some Canadian economist to write such a book, which is badly needed. Meanwhile, the wealth of factual information in Mr. Jamieson's book will make it very useful to students of and lecturers on the Canadian banking system.

BENJAMIN HIGGINS

Economic Survey of Europe Since the War. Economic Commission for Europe. (United Nations, Geneva, 1953.) Pp. xii + 385. 25/- stg.

Unlike the previous annual Reports, the present Survey reviews the economic developments in Europe for the whole of the post-war period including 1952.

As in the earlier reports, the reader cannot be but impressed by the enormous amount of preparation that must have gone into its ca. 200 double-column pages of detailed analysis and the nearly as many pages of tables and notes. The clarity with which the major problems of Europe are expressed and analysed deserves nothing but praise. In view of the wealth of material, the following brief review can hardly do more than mention some of the major findings and recommendations.

The Survey consists of four parts and supplementary statistics. In Part I, which deals with Europe's post-war setting, it is shown that by the end of 1947 Europe's working population and productive capital were up to pre-war level and that the conditions for a rapid recovery in production were therefore present. On the other hand, Europe's external position was much less favourable than before the war. As major factors in this continued disintegration of the world's payment system the report mentions: the change in the distribution of the flow of dollars from the U.S., the shifts in the world production of primary goods and the general deterioration in Western Europe's position regarding invisibles and in its terms of trade.

In Part II, the chapters 3, 4 and 5 are devoted to Eastern Europe, the Soviet Union and Western Europe respectively. Significant is the development in Eastern Europe where, after a period of reconstruction, investment was devoted largely to heavy industries, at the expense of current consumption and even at the cost of relatively neglecting such sectors as agriculture and housing. In the future, heavy industry will be given even higher priority.

In Russia, the combined share of investment and defence in national income is expected to continue to increase and the rise in consumption levels appears very modest.

In Western Europe the post-war period, till 1951, saw a continuous expansion of production. This prolonged boom, says the Survey, was "carried on waves of successive external stimuli", namely, pent-up post-war demand, American aid (on the supply side), the 1949 devaluations and the Korean war. But early in 1952 anti-inflationary policies began to take effect and partly also for other reasons, the economy of Western Europe has since "lapsed into stagnation". N.W. Europe, Western Germany, France and Italy

are discussed in detail. It is noted that the poorer countries in Southern and South-eastern Europe lagged behind the rest of Europe in employment and investment.

In Part III the European external trade- and payments problem is carefully analysed and the inadequacy of post-war structural adjustments is brought to light. Even if import restrictions are maintained or even increased, the Survey estimates that Western Europe will have to make an adjustment in dollar trade of 2–2·5 billion dollars. An adjustment of ca. 4 million dollars would be necessary if discriminating import controls were to disappear and currency reserves to be sufficiently strengthened. To achieve adjustment, dollar earnings must be increased, production of food and raw materials in Western Europe and non-dollar areas stepped-up and imports of dollar manufactures replaced. The U.S. could add to the solution by easing import restrictions and by dollar investments which would enable the recipients to spend these dollars on European exports.

Part IV deals with problems concerning manpower, agriculture, textiles and heavy industries. Attention is drawn to unemployment in Southern and Central Europe. The long-term solution of the problems in European agriculture is to be found outside agriculture in an expansion of industry. The textile industry is a declining one but output of steel and engineering should be expanded faster than home demand in order to develop the export potential of the engineering industry.

Particularly interesting is the last chapter of Part IV of the Survey, dealing with the problems of economic integration and with the failure of post-war attempts to achieve a reversal of the historical trend towards national autarky.

Whereas so far the discussion has been in the light of a solution of the Western European trade- and payments problem, we now notice a brief switch to international welfare economics. To the statement that the essence of economic integration is a higher degree of specialization, the proviso is added that the specialization should be of such a kind as to secure a reasonable equality in levels of development and standards of living in the different countries. In this connection the Survey recommends industrial protection in the relatively retarded countries of Southern Europe and capital transfers from North-Western to Southern Europe.

A. J. REITSMA

The Economic Development of Ceylon. (Johns Hopkins Press, Baltimore, and Oxford University Press.) Pp. xxxii + 829. $7.50.

This book is the report of a mission arranged by the International Bank for Reconstruction and Development at the request

of the Government of Ceylon. The report is in two parts. In some 130 pages, Part I describes the setting of the development problem in Ceylon, outlines requirements and summarizes the main recommendations. Part II considers the various sectors more fully and supports the recommendations in detail.

Ceylon has advantages over many under-developed countries. It accomplished the transition to full independence and self-government with little dislocation and with a competent and well-trained cadre of civil servants at the centre. After Malaya, income per head is the highest in the region (equivalent to U.S. $120 per head gross) and gross investment of 11-12 per cent. of gross national product is also relatively high. Offsetting these advantages are the recent acceleration in the rate of population growth and dependence on imports for half the rice needed to feed the people. This becomes important because of the possible precariousness and cost of imported supplies in a region in which population is increasing, production per head is still only about 82 per cent. of pre-war, and political instability may affect exports from such countries as Burma and Siam. The required exchange must be provided largely from exports of tea, rubber and coconut products, which cannot be expected to expand as rapidly as in the past, and are also subject to price fluctuations.

In this situation the missions do not prostrate themselves too low before the sacred cow of industrialization, beloved of the more cloistered exponents of development theory, but give first priority to agriculture with special but not exclusive emphasis on the so-called "dry zone" which is relatively sparsely settled. New Zealand should be interested in this aspect of the report because a large part of its contribution under the Colombo plan is for research, development and colonization in this area. Industrialization is the "second string" and for some time should be concentrated mainly on small and decentralized types. The authors have interesting things to say on the development of water resources, power, transportation, banking, investment and so on.

Particularly refreshing is the explicit recognition of the "human element", and the need to change attitudes, promote technical consciousness, increase technical knowledge and skill by education and research, improve efficiency by fuller health measures, facilitate mutual aid through rural development societies, co-operatives and other forms of organization, and improve public administration so that all these may be done more effectively. Thus social expenditure is supported as a necessary element in development and not simply as a by-product or end result.

After having had the opportunity to briefly survey the rural development activities in Ceylon, this reviewer has the impression

that the Mission are not fully seized of the significance of the community project approach. They speak approvingly of the Rural Development Societies as ancillaries, but by contrast with the Planning Commission of India do not visualize the Community Development approach, in which the societies have a vital role, as providing agencies *through which* national services may be more cheaply provided and effectively co-ordinated, capital formation and other activities stimulated on a self-help basis, and the participation of the people in development programmes encouraged.

The least satisfactory part of the report is that dealing with financial requirements. The exposition here is confusing and one suspects also, a little confused. In the absence apparently of empirical enquiries, a capital : output ration of 4 : 1 is assumed. But their calculations *appear* to be based on gross figures, and this may seriously vitiate the conclusions and also the comparisons of capital formation with other countries. They consider that existing investment would produce Rs 125 million a year, which if net would require *net* capital formation of Rs 600 million a year. Levels of consumption would be maintained for a population growing at 2½ per cent. a year by an increase of Rs 106 million (presumably in the first year) which if net would make the net national income Rs 4,240 and leave Rs 125 — Rs 106 = Rs 19 million for growth in income per head. (In 1950-51 *gross* national product at market prices was Rs 4,450 million, and *gross* capital formation some Rs 502 million or 11-12 per cent.) But net capital formation would have to be about 14 per cent. of net national income to provide Rs 600 million a year, a possibility on which one is sceptical. Since it is not a case where a few per cent. or a few million rupees either way are neither here nor there, it would be helpful to a tyro in finance such as the reviewer had the exposition on this important aspect been a little more lucid and had some attempt been made at estimating net figures. The importance of more precision and lucidity here is increased because a small change in the assumption as to the rate of population increase would make a big difference. In 1951 the rate of growth is stated to have been 3 per cent. (Economic and Social Development of Ceylon 1926-50.) If this persisted instead of the assumed 2½ per cent. it would mop up the surplus available for growth—if indeed this surplus did not disappear by using net figures.

With the reservation referred to the report is attractively and clearly written and is a fund of information for those interested either in Ceylon or in the problems of development in under-developed countries.

H. BELSHAW

Social Survey of Kolhapur City, Vol. II and III. (Gokhale Institute of Politics and Economics.) Vol. II, pp. x + 346; Vol. III, pp. xiv + 330. Rs. 12 or 18/- stg. each volume.

Without any knowledge of Vol. I it is still clear that these surveys are full of interest for Australian social scientists. The town is one of about 100,000 people, in the Maratha region of Bombay province, and well inland, on the Deccan. The survey shows a town which has many parallels to European towns in the days of handicraft industry and its survey of small establishments, metal workers, leather, textile, pottery and tertiary occupations, shows a rather bewildering pattern of correlation between traditional craft occupations, caste groupings, religious groupings and variations on these produced by immigration of the trader and "priestly" castes—and might serve to suggest that medieval Europe, similarly, was not merely based on industrial specialization.

The impact of western culture, (e.g. the decay of handloom weaving from 1890 onward, the coming of motor repair workshops and the consequent improvement in job opportunities for metal castes, the film industry with two cinema studios in the town) has been rather gradual. The interrelation of literacy, industrial skills and income levels is well brought out. The studies of income and poverty appear to be thorough and authoritative, with adequate notice of probable understatement in traders' incomes and the effects of inflation.

The study of poverty is very illuminating, notably in such matters as a negative correlation of social standing and income, where scheduled castes (untouchables?) are economically higher than Marathas who, because of past superiority, have a social tuboo on their women engaging in hired work. The authors are forced to enlarge the category of poverty to define a destitution and a starvation level and for the city as a whole their percentages (by family groups) are: Below the poverty line 86 per cent, below the destitution line 59 per cent and below the starvation line 12 per cent. It is not unlikely that European towns approached these appalling levels in medieval times and, translated into terms of debility and short productive life, they account for the low productivity and hence for the astonishing rise in living standards with the application of science to social hygiene and industry. It is easy to predict a similar transformation in India, in the course of two generations. Incidentally, in describing handicraft and trade groups the phrase recurs monotonously: "Business was slack in the rainy season". Apart from Saints' Days, this seasonal intermittency of industrial activity was the main cause of low productivity in medieval Europe.

The survey is comprehensive, covering housing, local government and a wide range of commercial activities, including the social vice of S.P. betting licensed by the local government. As betting is not legal in the rest of Bombay State it is possible, though not stated, that the turnover is swelled from outside sources. The nine "bucket shops" three of which make no returns available, show an aggregate which is appalling for the degree of poverty shown.

It is to be hoped that such surveys are repeated at frequent intervals as such micro-economic studies are worth more to social scientists outside India than all the superficial impressions of distinguished visitors.

The book suffers considerably from misspelling and imperfections of the Indian printing trades and some misprints must be very misleading to Indian scholars. "Refuse" is printed as "refuge" each time it appears and Rowntree's studies of English poverty are ascribed to Rowntry and Rawntry. Aspects not noticed are the drink question (apart from "addiction to drink" as a characteristic of some classes of workers) and mortality studies; which are probably covered in Vol. I. It will be interesting to see if India can escape the alcoholic mania which raged with European industrialism.

Throughout the authors have been alert to record all evidence of growth and change and show that the pre-industrial caste and craft system was certainly not static or not as much as is commonly supposed. The anthropologist and social historian will gain considerably from these clear and comprehensive surveys.

K. M. DALLAS

The South Seas in Transition. By W. E. H. Stanner. (Australasian Publishing Co., Sydney, 1953.) Pp. xiv + 448. 50/- (Aust.).

The sub-title of this work is *A Study of Post-War Rehabilitation and Reconstruction in Three British Pacific Dependencies.* The dependencies are Papua-New Guinea, Fiji and Western Samoa. The book is what many people interested in problems of development have been waiting for—a case-history written by an anthropologist who knows his economics and politics.

It does not give the detailed survey of natural resources or the specific plans for development contained in such reports as those of the International Bank for Reconstruction and Development. On the other hand, it discusses ethnographic and political factors infinitely more fully. There are, of course, factors besides the authorship of the respective studies, which account for these differences. The resources to be described are probably much poorer in the Pacific Islands than in Ceylon, Cuba, Iraq, Turkey, etc. Certainly, less is

known about them. Again, these islands are less far along the road of economic and political development. (With the exception of Surinam the "subjects" of the Bank reports have all been self-governing.) As regards the lack of specific programmes, it must be admitted that isolation of the factors which will determine and limit the success of "planning" is sufficient scope for one volume. By no means the least interesting sections of the book are those which survey post-war (and to some extent pre-war) policies in each dependency. In doing this the book covers considerably more ground than the sub-title indicates.

In Papua-New Guinea an extremely broken topography, a native population divided into small non-interactive groups and native culture(s) antithetical to individualism and accumulation provide poor materials for development programmes to work on. Dr. Stanner, quoting J. H. Boeke, sees Australia's post-war "new deal" policy for New Guinea as assuming "that the (native) people had never lacked anything but the opportunity to elevate themselves—an opportunity which, if put in their way, they would seize with both hands". This made disappointments inevitable.

The characteristics and potentialities of the populations of Fiji and Western Samoa are also discussed. Whereas New Guinea is thinly populated, rapidly increasing populations in the other two regions are already creating serious pressures. In Fiji, the descendants of Indian labourers have recently outstripped native Fijians in number and are still growing at the faster rate.

If one is permitted a little carping, the statement on page 112 that full employment in Australia prevented the flow of nearly everything except money to New Guinea, seems to require qualification. The statement on pages 206-7 that "per capita imports . . . have risen . . . about three times as fast as total population", does not say quite what it means to say.

But these are very minor points. If I were allowed only three adjectives to describe this book, they would be: realist, humane and conservative—in a sense in which no one of these terms necessarily implies either of the others.

A. S. HOLMES

We Too Can Prosper: The Promise of Productivity. By Graham Hutton. (London: George Allen & Unwin, 1953.) Pp. 248. 12/- stg.

Over sixty teams of observers, under the sponsorship of the Anglo-American Council of Productivity and representing many diverse sections of British industry, have been sent across the Atlantic since 1949 to investigate American methods of raising productivity

with a view to discovering lines of action which could be taken to improve productivity levels in Britain. As these teams have been investigating separate segments of industry, the conclusions and recommendations presented in the published reports of the different teams have quite naturally varied considerably. However, on many fundamental issues the different teams have been in remarkably close agreement. It was for the purpose of bringing together these common threads and presenting them in a readable and balanced form that the Council of Productivity asked Mr. Hutton to write this book.

Perhaps the most interesting conclusion reached by Mr. Hutton is that the raising of productivity in Britain can be carried a long way in a short space of time without significant increases in investment. By and large, however, the academic economist will find little in this book to satisfy his appetite; it contains neither the wealth of statistical material provided by Rostas, nor the analytical insight of Rothbarth. But this is not intended to be a work for the economist. It is written for the ordinary citizen, for the trade unionist, the company manager, the industrial consultant. Moreover, it is not designed primarily as a passive commentary on facts, but as a provocative challenge to British enterprise and imagination on both sides of industry. In the light of what it sets out to achieve, this is an eminently successful book.

A. H. Boxer

Studies in Econometric Method. By Cowles' Commission Research Staff Members, edited by Wm. C. Hood and Tjaling C. Koopmans. (John Wiley & Sons, New York; Chapman & Hall, London; 1953.) Pp. xix + 323. $5.50.[1]

Studies in econometric methods have not always a good press in the professional journals through which the ordinary economist tries to keep his finger on the pulse of developments in his field. In back numbers of *The Economic Record* one finds a reviewer groaning that "theoretical publications of [that brilliant team of pioneers assembled in] the Cowles' Commission have tended to obtain for themselves a reputation for being difficult to read, abstract, and addressed to a small circle". And such a stimulating and thought-provoking piece of research as the famous Monograph No. 10: Statistical Inferences in Dynamic Economic Models (Edited by Tjaling C. Koopmans), while clearly recognized as "outstanding", is nevertheless described—decidedly not without reason—as "difficult going, impossible for the non-mathematician, obscure for most mathe-

1. The contributors are: W. C. Hood, T. C. Koopmans, S. G Allen, Jean Bronfenbrenner, H. Chernoff, N. Divinsky, M. A. Girshik, J. Marschak, H. Rubin and H. A. Simon.

matical economists". However, the reviewer added, "it whets the appetite for the promised parallel monograph of a more expository character". Well, here then is the promised companion volume; and it is a pleasure to announce that the promise has largely been kept.

At least four chapters of the present monograph make no more demands on the student's equipment than is within the reach of an intelligent honours class. The statistical requirements are rigorously kept down to the rock-bottom level of what every economist should know, and the difference equations used do not transcend the level of those potty "model sequences in time" that are gradually becoming stock-in-trade of every ambitious textbook.

Chapter I—lucidly written by J. Marschak—gently breaks the ground for the problems ahead, and the reader is prepared for the new vocabulary which he will encounter. In chapter II—culled from *Econometrica*, April 1949—Tjaling C. Koopmans illustrates by means of a few well-chosen and straightforward examples the problem of "identification" and its relevance for the formulation of theories that are meant to be put to a rigorous empirical test. Trygve Haavelmo's well-known discussion of Methods of Measuring the Marginal Propensity to Consume—which appeared in the *Journal of the American Statistical Association*, March 1947—is reprinted here as chapter IV and illustrates clearly the problematic nature of the traditional methods of estimation by least squares in comparison with the method of maximum likelihood. And in chapter V, M. A. Girshik and T. Haavelmo analyse an example of statistical estimation of the demand for food which anybody conversant with the routine analysis of agricultural data and aware of the pitfalls in the mechanical application of multiple correlation methods, should not find too difficult to follow.

There is no obvious reason why chapter III should have been sandwiched between essays on this expository level. What H. E. Simon suggests there in regard to Causal Ordering and Identifiability is interesting enough and deserves to be examined at leisure, but the reviewer could not suppress a lingering suspicion that the philosophy of operationalism is an ephemeral fashion rather than an eternal truth. So he pressed on with the reading of the book and did not feel that in chapter III he had missed an essential clue to the remainder.

With chapter VI we come to the pièce de résistance of the present volume and the going becomes distinctly difficult until in chapter X—by Chernoff and Divinsky—we arrive at one of those forbidding tracts which are the delight of computing wizards. The reviewer feels that within the compass of the present notice an adequate summary, let

alone a critical discussion, of the systematic exposition of the large sample theory of maximum likelihood estimation in a shock model specifying linear equations and normally distributed disturbances, which T. C. Koopmans and Wm. C. Hood present in chapter VI, cannot possibly be attempted. And the same applies to the extension of the methods and results of chapter VI to more general conditions, including non-linear relationships, which Messrs. Chernoff and Rubin propound.

The owner of modest mathematical equipment can only be advised and encouraged to try for himself. And should he—in the words of an earlier reviewer—experience that sinking feeling "that the average economist has not got time, in this life-time, to master this new theory", then he might well recall the profound word of advice which d'Alembert once gave to a despairing novice: "Go on, and faith will come to you".

H. BERNARDELLI

Associated Measurements. By M. H. Quenouille. (London, Butterworth, 1952.) Pp. xi + 242. 49/6 stg.

This is an account of statistcial methods applied to problems involving two or more variables. Being a book on methods and not on theory it may be regarded as a sequel to Quenouille's earlier *Introductory Statistics,* and requires substantially more knowledge on the part of the reader.

The first three chapters deal with graphical methods for testing and measuring association between two variates. Such methods need to be used with some caution and it is doubtful if the methods described are worth the one-quarter of the whole book devoted to them. A welcome feature, however, is a description of Tukey's corner test with tables for applying it. A description is given of a partial medial correlation coefficient, defined by a curious formula which looks at first sight like a misprint. Unfortunately no references for the origin of this formula or for some of the other methods used are given.

The next three chapters give a good account of linear regression and correlation analysis, but the statement on p. 85 that partial and multiple correlation coefficients should be used to indicate the extent of association rather than for testing such association is surely not sound.

Chapter seven deals with further rapid methods of analysis, whilst chapter eight gives a clear and useful account of the analysis of covariance and contains a section on the estimation of components

of variance. Chapter nine consists of remarks on large-scale investigations and in particular linear regression on a number of variables. Chapter ten deals with the assumptions underlying regression analysis (a problem still widely misunderstood), with the use of transformations, and with methods of estimating underlying relationships. This tricky question deserves a longer and more thoroughgoing treatment than that given here.

The last two chapters dealing with time series and with multivariate analysis are much the most important part of the book; it is a pity they were not expanded. The account of time series analysis is particularly illuminating and useful and contains some interesting examples. Not all the methods suggested will meet with general agreement. On p. 70 Quenouille substitutes the observed sample serial correlations in the formula for the standard error of the correlation between two serially correlated time series. However, the resulting series is unstable statistically, and it is better to fit theoretical schemes to the two series first and thus calculate the higher serial correlations from the lower ones. The use of a partial correlation coefficient on pp. 170-1 also seems unnecessary. There is a useful account of multivariate analysis, dealing with discriminatory analysis, factor analysis and canonical correlations. With both these chapters, however, one has the feeling that anyone unacquainted with the theoretical background may be more likely to be misled than instructed.

Some minor points deserve mention. The use of the word "unaccountable" for the term in analysis of variance usually called "error" is objectionable. Worse still is the use of "x_1—x_4" to denote "$x_1, . . x_4$", a habit which makes a number of sections very puzzling (in particular table 11.5a is unintelligible).

This book, unlike some, is written by one who really understands the subtle problems which underly much of this kind of work. It will reward study by any economic statistician who has mastered the more elementary parts of the subject and who is prepared to read up some of the references.

P. A. MORAN

Demand Analysis: A Study in Econometrics. By Herman Wold, in association with Lars Juréen. (John Wiley & Sons, New York; Almquist & Wiksell, Stockholm; 1953.) Pp. xiv + 358. $7.00.

Econometrics suffers from two great handicaps. The first is that controlled experiments are not possible, and the second is that empirical data, even if obtainable, are often unreliable. For these reasons quantitative research in economics is less rigorous than in

the natural sciences, despite the highly refined statistical methods available to research workers. The modern methods, however, apply primarily to experimental data, and are not well suited to the analysis of economic phenomena. In econometrics it is necessary to have a thorough knowledge of the field and to use all sorts of experience and *a priori* information. Consequently quite simple statistical methods are an advantage because of their greater flexibility and adaptability to any auxiliary information. In particular, the traditional methods of least squares regression, with their attractive simplicity, should not be discarded lightly.

In *Demand Analysis* Wold states a strong case for the well-known straightforward regression methods in studying consumer demand. He sets out to give a systematic account of the methods of demand analysis, using as illustrations the authors' empirical studies of consumer demand in Sweden during the inter-war period. The methods of analysis refer to the static case throughout. The book is designedly both a research report and a specialized textbook on Econometrics. As Wold says, empirical and theoretical inference are interwoven in demand analysis. Thus in order to give a self-contained account of methods and results, economic theory is introduced as well as statistical methods and probability theory. The main topics dealt with are, therefore, the theory of consumer demand, the theory of regression analysis and certain aspects of the theory of random processes.

Part I gives a broad survey of topics and findings. Here, in a non-technical manner, appear a discussion of the ends and means of demand analysis, a vigorous defence of the validity of least squares estimates, and an account of the theory underpinning demand analysis. These eighty pages are free from what Wold describes as "the formalism which is such an alarming feature in much of the modern econometrics".

Parts II-IV are more concentrated. They deal, respectively, with economic theory, the theory of stationary processes, and last squares regression analysis. The treatment in these parts is highly condensed and mathematical. The exposition of the Paretian theory of demand, in particular, is very elegant. Of interest, also, is the chapter on family budget data. Part V gives the empirical findings. It contains estimates of elasticities of demand for many individual commodities as well as estimates of a more global nature.

The book concludes with a good bibliography. At the end of each part is a collection of exercises. There can be little doubt that *Demand Analysis* is an important contribution to econometrics. As such it deserves to be read widely.

J. W. Rowe

On the Theory of Economic Policy. By Jan Tinbergen. (North Holland Publishing Company, Amsterdam, 1952.) Pp. 78. Fl. 4.

This book may well disappoint expectations aroused by its title. Professor Tinbergen has a few scrappy chapters on the definition, characteristics, and reality of economic policy, but they are little more than tasteless icing round his solid econometric cake. What he really seeks to explain is the use of Frisch's "decision models" by those who have to work out the quantitative implications and feasibility of "targets" set by higher authorities and to choose appropriate "instruments" among those available.

The procedure is to use a basic econometric model of the familiar macro-type, making fullest use of linear approximations. It is natural, for policy purposes, to divide variables into "data" "target variables", and "instrumental variables". For example, in a problem of closing the balance of payments, import prices may be a datum, the deficit = 0 a target, and the wage-rate an instrument. A fourth class may, for a particular problem, be regarded as irrelevant variables, and if so the basic model can be greatly simplified.

For the parameters in such equations as survive the simplification, assumed values are adopted (presumably on the basis of statistical tests), but the effects of variations in these assumptions are examined later. Further equations, however, are added to correct the linear approximations; these are "boundary conditions" expressing physical, social or political limitations upon the variation of some variables.

As the author says: "In the traditional problems, political instruments are among the given entities and the targets among the unknowns. In the theory of economic policy, these two categories interchange places; in a sense the problem is inverted". In the most novel and interesting chapters of the book he shows how to investigate the compatibility of targets and instruments (the minimum, but not too common, condition of which is that both are of equal number), the consistency of solutions with given boundary conditions and the "effectiveness" of alternative instruments. He has also some valuable remarks on "the solution of complicated problems by splitting up in stages".

The editors of the new series in which this book appears have the laudable aim of improving international economic co-operation by making available fresh contributions by Dutch authors. Nothing Professor Tinbergen writes can fail to be helpful, and this book is a welcome elaboration of Chapter 8 in his *Econometrics*. Unfortunately it shows signs of haste, and a little more care in presentation would have made it easier to grasp his basic model and the subsequent simplifications.

C. G. F. Simkin

The Principles and Practice of Management. Edited by E. F. L. Brech. (Longmans Green & Co., London, 1953.) Pp. xvi + 752. 82/9 (Aust.).

Many reports and publications in recent years have emphasized the excellence of American management and have shown how the high standards reached in this field are related to the extensive facilities provided in the United States for training in administrative studies at an advanced level. British countries are now placing greater emphasis on the importance of education for management, and the publication of a first-rate British text-book covering the whole range of management studies should therefore be welcomed.

An introductory chapter on "Management in Principle" and a concluding chapter on "Management in Practice" are designed to weave the specialist studies which form the content of the rest of the book into a unified whole. These specialist studies deal with four major divisions of management—distribution, production, personnel and control—and each subject is dealt with by a different author. There is inevitably some overlap in the contents of these four sections, because (as is pointed out in the introductory section dealing with the functions of management) the fields covered are not mutually exclusive. But this does not upset the balance of the book.

In the introductory section the editor makes an interesting attempt to establish a set of principles of management, but since his principles have been deduced from "analytical study of the practical working of management" it is clear that they are principles in a limited sense only—rules or guides to action rather than fundamental truths. There is a most useful appendix to this section, providing an outline history of management thought in the United States, France and Britain. In the specialist sections techniques relevant to each of the four main divisions of management are competently discussed, although certain chapters (e.g. the chapter on cost control) will probably be difficult for the non-specialist because of the attempt to condense difficult and specialized subjects into a few brief pages.

R. L. MATHEWS

Effects of Taxation : Investment by Individuals. By J. Keith Butters, Lawrence E. Thompson, and Lynn L. Bollinger. (Harvard Business School, Division of Research, Massachusetts, 1953.) Pp. xxxiv + 533. $6.25.

This is the seventh and final volume in the series of studies of the effects of taxation on business, conducted through the Harvard Graduate School of Business Administration. It is the most elaborate study in the series. It is an attempt to appraise the effects of taxation

on the flow of outside capital—mainly equity capital—supplied by private investors to business enterprise in the United States. The primary source material was derived from comprehensive interviews, during the summer of 1949, with a carefully selected sample of approximately 750 individual investors, many of whom had large incomes.

In brief, the analysis consists of attempts to answer three main questions: (1) Whose investment decisions are important? (2) How have taxes affected the investment capacity of these groups of investors? (3) How have taxes affected their investment policies?

Detailed analysis provides a clear answer to the first question. The figures speak for themselves. The distribution of annual accumulations of new investable funds by individuals between 1947 and 1950 is estimated to be as follows:

> 30-35% was accumulated by the top 1% of all spending units (with annual incomes of $15,000 and over);
> 45-50% was accumulated by the top 3% of all spending units (with annual incomes of $10,000 and over);
> 60-65% was accumulated by the top 5% of all spending units (with annual incomes of $7,500 and over).

It is estimated that in the order of 65-70% of all marketable stock held by private individuals is owned by family spending units with net worths in excess of a quarter of a million dollars. Also, it is estimated that in 1949 the top 3% of all spending units held about 75% of all marketable stock owned by private investors.

On the second question, the authors conclude that

> The changes in the tax structure over the past 15 to 20 years have substantially reduced the capacity of upper bracket individuals to accumulate new investable funds, *but that . . . their remaining capacity is still very large*—much larger than is generally supposed.

It is impossible to summarize here the evidence lying behind this finding. It includes, among other things, a specific estimate of the concentration of accumulations of new investable funds in the upper income percentiles and a careful discussion of the means available to upper income investors for avoiding the full impact of the high personal income tax rates.

The analysis designed to answer the third question constitutes the largest section of the book. It includes a detailed appraisal of the general investment objectives of individuals and of their attitudes toward specific types of investments such as marketable common stock, new issues, new ventures, family businesses, tax-exempt bonds, and life insurance and annuities. It leads to the conclusion that the tax structure in 1949 on balance decreased the willingness of upper bracket investors in the aggregate to make equity-type investments.

For equity-type investments considered as a whole the investors who were induced by taxes to shift to less risky investment positions appear to have over-balanced the opposite reaction of appreciation-minded investors. The latter group, however, may have been so stimulated by the tax structure to seek out investments offering unusually large capital gains potentialities, such as promising new ventures, as actually to increase the flow of capital to such situations. However this may be, it is clear that the combined impact of these effects fell far short of drying up the supply of equity capital which private investors were willing and able to make available to business. The evidence indicates that individuals with large incomes and substantial wealth continue as a group to hold and invest a large proportion of their funds in equity-type investments.

After discussing in general terms the changes since 1949 in the tax law and in underlying business conditions and investor attitudes, the authors conclude that their findings would not be significantly altered by events which have occurred since 1949.

It is impossible in the space available to do justice to the wealth of data presented in this book. Much of the information is significant for many purposes other than tax analysis. The sampling procedures are discussed fully and frankly in an appendix, and all the necessary qualifications are carefully stated at each stage of the analysis in the text.

It is to be hoped that we shall before long have a complementary study of comparable quality analysing systematically the effects of taxation on the timing and amounts of investment by business.

W. R. LANE

International Insurance Transactions. By S. J. Lengyel. (Wadley and Ginn, London, 1953.) Pp. 139.

The first 19 pages of this book are devoted to a critical examination of the importance, scope and trend of the operations of insurance companies in international balance of payments transactions.

Along with other private finance transactions, the treatment of the various insurance items (life, marine, general—including reinsurance) was comparatively straightforward when the balance of payments estimates were prepared on a "payments" basis, i.e. when the balance of payments was conceived merely as an itemized account of international receipts and payments during a given period. Most countries were able to prepare reasonable estimates of the values of these transactions from exchange control or other banking data or by means of simple questionnaires. Balance of payments estimates are now generally published on a "transaction" basis and all transactions which result in increased or decreased international indebtedness

should be included irrespective of whether or not the actual payments are made during the period concerned. This complicates the treatment of insurance transactions when remittances may be more related to investment policy than to earnings and losses during a given period. Most published balance of payments statements are very weak in their treatment of insurance items and many countries appear to have put them aside until they have coped with other items involving amounts of greater magnitude.

Mr. Lengyel may exaggerate slightly when he claims that "the complexities of insurance and the peculiarities of insurance accounting are indeed without parallel in international transactions" (p. 14). Despite the undoubted complexity of establishing the value of "true earnings" of insurance companies as opposed to their published profit and loss, it is doubtful whether they provide more headaches for the balance of payments statistician than the operations of petroleum companies or shipping companies—indeed, if the concept of "true earnings" were applied to all companies, estimates of the amount of undistributed income accruing each year to oversea investors would create an almost impossible task.

In a brief resume of recent world trends in insurance transactions Mr. Lengyel shows how "a narrow and pernicious nationalism has manifested itself" with local companies in most countries progressively displacing foreign companies. At the same time State intervention in the form of restrictions and discriminations and nationalized insurance have radically altered the international pattern in the last two decades.

Apart from two pages of conclusions, the remaining 120 pages of the book give a factual rather than a critical description of available statistics of the insurance transactions of 52 countries together with notes on recent trends. This treatment is naturally somewhat superficial but will be an invaluable reference guide for future researchers into similar topics. The country-by-country detail together with the excellent bibliography are evidence of the extremely wide scope of Mr. Lengyel's investigations into a field which has been most inadequately explored up till now. Further editions of this book are promised in order to keep the information strictly up-to-date.

L. B. BRAND

The World the Dollar Built. By Gunther Stein. (Denis Dobson Limited, London.) Pp. 288. 12/6 stg.

Constant fear of depression and unemployment, under-nourishment, the ugly power of "Big Business", its propaganda and influence on the Government, inadequate medical care, mental unbalance, prefabricated "war scares", lack of sufficient education facilities and

falling real wages are but a sample of American post-war sufferings as painted by Mr. Stein. According to him, the only things that have prevented another depression in America, with all its disastrous consequences for the world, were post-war rearmament and the Korean war, which have become a necessary part of the American "free enterprise" economy. He also holds America responsible for the heavy armament burden in Europe, caused by "world reactions" to American domestic and foreign policy. For the post-war political tensions in the world America gets all the blame.

The solution is to make the United States a "welfare state". ("'Welfare States'—alone can compose a truly peaceful and progressive world"). But why has "Big Labour", as Mr. Stein calls it, in view of all the social injustice and economic fears, failed to meet with success? Here, the author does not sound too convincing: "The Cold War atmosphere has brought a surprisingly large part of their leadership into the Captive Audience of the opinion making industries". He goes even further and holds the American economic system responsible for the defeat of Labour in Britain, Australia and New Zealand.

The author deals with a number of very real and serious problems. But in his 280 odd pages of political journalism he displays a nearly naive faith in the possibilities of planning to solve the post-war problems of America and the world, economic as well as political. His economics are not impressive. No attention whatsoever is given to possible sufferings of people at present under Communist rule.

A. J. REITSMA

Les Salaires. By Robert Mossé. (Librairie Marcel Rivière et Cie, Paris, 1952.) Pp. 328. 950 francs.

This is the third volume of the Bilans de la Connaissance Economique and the second by Professor Mossé in the series. The author has had wide experience as an arbitrator in wages and labour disputes and is already the author of a standard French work of reference in the field, viz. his "Manuel d'Economie et Législation industrielle". Looking back to the beginning of his specialized studies in this field he now feels that he would then have been helped by a handbook surveying the whole field so that at any point in it he could get his bearings. To provide such a guide is what he himself does in this book for those students following him, and they will be grateful for it.

The book contains an account of the course of wages in nineteenth century France and of classical thought on wages; of wage-fixing methods of the present day; of partial, general equilibrium and aggregative analysis applied to wage-rates; and of the role of

social and political factors. Following this general conspectus and in accordance with the usual pattern of this series of works is a section of comments by two other writers; in the present case this takes the form of an article, with tables, on the present state of wage statistics in France, Italy, U.K. and U.S.A., by Mm. Rivet and Dumas. Lastly, there is a large and annotated bibliography including a section on sources of information about wages and industrial relations in each of a dozen and a half countries. However, the United Kingdom and the Commonwealth countries are treated as one, and the distinctive Australian experience in this field is not well covered; only two references are given, and although valuable they date from 1931 and 1936 respectively.

Perhaps the most distinctive characteristic of the book is its insistence on the importance of sociological, psychological and political factors, and indeed their inextricable intermingling with economic forces, in the determination of wages. On general methodological grounds, Professor Mossé deplores the dethronement of political economy by economic science and wishes to bring the social sciences as a whole to bear on the problem, and he furthermore concludes that economic analysis itself has in any case little to offer in explaining wage-rates or predicting the effects of a given change in wage-rates. Readers will vary in the distance they are willing to follow along this line, but it is not necessary to follow all the way in order to find the book of value in the task which it attempts.

R. Barback

Introduction to Economics for Agriculture. By John D. Black. (The MacMillan Co., New York, 1953.) Pp. 727. $6.

There is always a danger that a text dealing with the economics of one special subject or another, will fail to explain general economic principles fully enough or will fail to put the special subject in its general setting. This introduction to economics for agriculture not only avoids this pitfall, but with clarity and well measured argument advances the beginning student into a comprehensive understanding of the field. The dilemma of whether students should be familiarized only with economic principles especially applicable in agriculture, or given a thorough grounding in economics first, is resolved in favour of the latter course. However, main principles are illustrated in part by examples in agriculture, and at the same time the subject is constantly placed in position in the general economy.

The first five chapters give general backgrounds, such as Chapter 3, "The Organization of Agriculture", and Chapter 5, "The Process of Economic Change". Then the major part of the book is organized around the central themes of production, consumption and distri-

bution. Money, credit, banking and trade come towards the end. There is no field of agricultural economics research which is not illustrated, and methods of survey and analysis are explained with many examples from the American literature.

John D. Black has long been a leader in the field of agricultural economics in the United States, and through his teaching at Harvard has influenced some of the few graduates in the subject in Australia. In this book he has supplied a text which seems admirably suited to the groups the author had in mind; agricultural students at the first year university level, or more advanced students needing a first course in agricultural economics.

R. KENT WILSON

Essays in Economic Analysis. By Abba P. Lerner. (Macmillan and Co. Ltd., London, 1953.) Pp. viii + 394. 28/- stg.

It has become popular in the last few years to bring together the writings of one author and produce a volume of collected essays. In some cases the result is far from worthwhile, containing as such books so often do, a heterogeneous collection of major articles written over a period of several decades bolstered up by a few snippets of a more popular nature. No such criticism can be levelled at this selection of Lerner's essays. They are all worthy of republishing in this convenient form, and present a formidable array impressing the reader with the magnitude of Lerner's contributions both to the technique of economic analysis and to general economic theory.

The book is divided into four parts, namely Ideal Output, Foreign Trade, More Diagrams, and Employment and Interest. By chronology and subject matter the first three parts have a certain unity in that they deal mainly with methods and techniques of analysing particular problems (with emphasis on the use of diagrams) and were originally written between 1932 and 1937. This section contains articles on the diagrammatical representation of cost and demand conditions in international trade, elasticity of demand and elasticity of substitution; "The Concept of Monopoly and the Measurement of Monopoly Power", and "Statics and Dynamics in Socialist Economics".

The articles contained in the section on Employment and Interest were written after 1936. This section includes his well-known articles on interest theory—"Alternative Formulations of the Theory of Interest" and "Interest Theory—Supply and Demand for Loans or Supply and Demand for Cash", and the admirably lucid article on inflation "The Inflationary Process—Some Theoretical Aspects".

The interesting style that is apparent in the later essays makes one wonder whether it is derived from the different subject matter or the greater maturity and facility of the author. If the latter is the case it seems a pity that Prof. Lerner did not take the opportunity of re-casting certain sections of his early articles, particularly "Some Notes on Duopoly and Spatial Competition" (written in collaboration with Dr. Hans W. Singer). Nobody will disagree with the authors' own comment that "this article was much more fun to write than it can possibly be to read".

R. J. A. HARPER

Economic Stability in a Changing World. By John H. Williams. (Oxford University Press, New York.) Pp. vi + 284. 42/6 stg.

Here is yet another collection of papers by a well-known and influential economist. Collections of this kind have become very popular since the end of World War II, and perhaps a reviewer may be forgiven for some silent thoughts on diminishing returns.

The most useful of Professor Williams' essays will certainly be found to be those on the Marshall Plan, which occupy the central portion of the book. There are six essays, all published originally in *Foreign Affairs,* dating from October 1947 to July 1952. They are concerned with a step to step description of the Marshall Plan and discussions on the financial problems of post-war Europe. Professor Williams emphasizes the long-term character of the European balance of payments difficulties, and thinks that some discrimination against dollar imports is inevitable.

As for the other essays in this volume, their main concern is with the gap between current economic theory and fact. Professor Williams draws attention to the limitations of the policy implications of Keynesian economics, limitations which he attributes largely to the static nature of Keynes's theory. Although within half a dozen pages or so he refers to the analysis of the demand for money as being the "chief innovation" of the *General Theory,* to the focusing of attention upon income as the "great contribution", to the propensity to consume as the "important novel feature", to the rigidity of money wages rates and the impossibility of curing unemployment by cutting wage rates as the "most important contributions", yet he comes out strongly for believing that the "stagnation thesis constitutes the essential content of the theory". This latter belief seems to me to place far too much emphasis on the sociological implications of the *General Theory* and far too little on the revolutionary modes of economic analysis which it introduced. It may well be that the

theoretical categories of the *General Theory* are imperfect instruments in a dynamic world. Nevertheless the considerable progress which has been made in recent years in the understanding of the workings of modern capitalist and mixed economies is almost entirely due to the theory of income determination developed by Keynes and his followers.

P. H. KARMEL

BOOKS RECEIVED

A.—AUSTRALIAN AND NEW ZEALAND PUBLICATIONS

AUSTRALIAN STEVEDORING INDUSTRY BOARD: *Fourth Report* (1953).

Commerce and Agriculture, Commonwealth Department of (Bureau of Agricultural Economics): *The Beef Situation, October 1953.* (Canberra, 1953.)

The first of a series of half-yearly summaries of the position of beef supplies and consumption trends in the principal importing countries, with particular reference to the prospects of the Australian industry. Much useful statistical information is included.

Commerce and Agriculture, Commonwealth Department of (Bureau of Agricultural Economics): *Fat Lamb Industry Survey, 1951* (Bulletin No. 10, Canberra, 1953).

A survey, based on a sample of 200 farms, of such aspects of the fat lamb industry as flock size and maintenance, breeds, feeding, marketing, and financial results. The survey brings out the fact that "although many other forms of primary production are associated with the fat lamb industry, its chief strength lies in the complementary nature of fat lamb raising and wheat growing." There are four maps.

MOUNTAIN, G. R., and others: *Taxation Policy* (The Australian Institute of Political Science, Winter Forum, 1953).

To be reviewed.

QUEENSLAND. Government Statistician. *Queensland Year Book, 1952.*

There are several new features, including some useful spot maps showing the distribution of cattle.

WESTERN AUSTRALIA. Government Statistician. *Statistical Register for 1950-51.* (Perth, Western Australia, 1953).

B.—OTHER PUBLICATIONS

ASHTON, T. S., and SAYERS, R. E. (Ed.): *Papers in English Monetary History.* (Oxford University Press, 1953). 33/6 (Aust.)

To be reviewed.

BAKKEN, Henry H.: *The Marketing and Manufacturing of Wisconsin Stemming Tobacco.* (University of Wisconsin, Madison, 1949).

A modest account of an industry supplying chewing tobacco, which perhaps unexpectedly brings together some extremely interesting facts about technical practices. There is a nice account of the creation of "the perennial buyers' market" for the tobacco crop. "The growers begin to scan the highway, so to speak, in their vigil for buyers. When none appear or no bids are received, the growers become restive. After a brief waiting period, the buyers may venture forth again to pick up a few more selected crops."

BAKKEN, Henry H., and MUELLER, Willard F.: *The Market for Wisconsin Binder Leaf Tobacco.* (University of Wisconsin, Madison, 1953).

A very thorough analysis of a rather peculiar market which affords some interesting illustrations of market situations. The general situation is that sellers are many and scattered, and buyers are few. The authors discuss the modifications introduced by the development of sellers' pools and government price-support programmes, the provision of market reports, and other institutional and voluntary factors. They propose certain measures to improve the bargaining position of the growers, all aimed at "improving the effectiveness of competition" in the market.

BASU, S. K.: *Industrial Finance in India.* 3rd ed. (Calcutta University Press, 1953). Rs. 12/-.

To be reviewed.

BURNS, Arthur F.: *The Frontiers of Economic Knowledge.* (Princeton, Princeton University Press, 1954. London: Geoffrey Camberlege). 52/6 Aust.

To be reviewed.

CHAMBER OF COMMERCE OF THE UNITED STATES: *The Economics of the Guaranteed Wage.* (Chamber of Commerce of the United States, Washington, D.C., 1953). 50 cents.

The "guaranteed wage" means in the United States guaranteed employment for a specified minimum period. This pamphlet argues that the idea has been applied in too limited a fashion for any generally favourable conclusions to be drawn, and that there are fairly strong reasons against its general applicability. "The demand for the guaranteed wage is in reality a demand for adequate job-opportunities, for high-level employment."

CHAMBER OF COMMERCE OF THE UNITED STATES: *What's the Answer? A brief guide to the sources of business statistics.* (Chamber of the United States, Washington, D.C., 1953). 50 cents.

A useful brief guide to the statistical sources of information likely to be useful to American business men, which will be helpful to librarians and students outside the United States.

CHAUHAN, D. S.: *Agricultural Economics.* (Lakshmi Narain Agarwal, Agra, n.d.). Rs. 12/-.

To be reviewed.

COLE, G. D. H.: *An Introduction to Trade Unionism.* (George Allen & Unwin, Ltd., London, 1953). 18/- stg.

To be reviewed.

COPLAND, Sir Douglas: *Problems of the Sterling Area with Special Reference to Australia.* (Essays in International Finance, No. 17, Department of Economics and Social Institutions, Princeton University, 1953).

To be reviewed.

CRUZ, Salviano (ed.): *A Revista de Pesquisas Economico-Sociais,* Vol. II, No. 3-4, September-December 1952. (Lisbon).

A sample copy of an economic journal which appears to be now well established. The present number contains articles on monopoly problems in the United States by E. S. Mason, and on econometrics by Gerhardt Tintner, as well as contributions by leading Portuguese and Brazilian economists.

CRUZ, Salviano: *Competicao Monopolistica nos Minerios do Brasil e a Previdencia Social.* (Lisbon, 1953).

To be reviewed.

DANDEKAR, V. M., and DANDEKAR, K.: *Survey of Fertility and Mortality in Poona District.* (Gokhale Institute of Politics and Economics, Poona, 1953). Rs. 5/- or 7/6 stg.

To be reviewed.

DAS, N.: *Men without Work.* (Eastern Economist Pamphlets). Rs. 1/-.

Rapidly increasing population (the interesting causes of which are not discussed) associated with "no corresponding increase in the amount of land brought under cultivation, nor, . . . any appreciable change in farming technique", and with no corresponding increase in industrial establishments, is the cause of unemployment in India. Increasing unemployment of educated middle class youths is partly caused by "a steady growth, accompanied by a decline in educational standards, in the number coming out of universities, colleges and schools." The problem can be tackled by reducing the population growth or by increasing economic development. Emigration is considered out of the question and control of fertility unlikely. But where is the capital for development to come from? Not from private sources in India. The level of income is too low, and no economic and social system that would lead to the "accumulation of capital in the hands of a few persons or groups would be tolerated (in India)". "The only effective way is through the mechanism of unbalanced budgets." The main problem of how the money provided from "unbalanced budgets" is actually going to be applied in putting men to work is not really dealt with. It appears that much action must be taken by the Govern-

ment, if it is to be taken at all. But India relies very much on private enterprise as well. The pamphlet really raises the question whether this will allow India to achieve the needed rate of economic development.

EMMINGER, O.: *Deutschlands Stellung in der Weltwirtschaft.* (Kieler Vortrag, No. 4, Kiel, 1953).
To be reviewed.

FERBER, R.: *A Study of Aggregate Consumption Functions.* (National Bureau of Economic Research, New York, 1953). $1.50.
To be reviewed.

FORD, P., and THOMAS, C. J.: *Shops and Planning. The Second Report of the Southampton Survey.* (Blackwell, Oxford, 1953). 4/- stg.
After a careful survey the authors conclude that Southampton can well do with more shops. They have some heartening remarks on the question of the "dispersed" shop, and are critical of some widely accepted assumptions of planners about the number of shops required for given populations. "Shopping is a personal and social activity. . . . A new housing estate, though architecturally attractive, can be socially dreary. Consumers' insistence on using dispersed shops should be regarded by architects and planners as a challenge to their professional skill in giving them a more ample and orderly place in the physical economy of new estates."

FORD, P., and THOMAS, C. J.: *Housing Targets. The Third Report of the Southampton Survey.* (Blackwell, Oxford, 1953). 4/- stg.
A careful survey of the housing requirements for the next twenty years if the needs of the population of Southampton are to be met according to three different minimum standards. Special attention is given to the problem of the splitting up of existing composite households: many would wish to do so, if appropriate accommodation were available, but many would not. Building sufficient homes to provide the net additional number of homes required would mean that many families would be in houses too large for them, and would have surplus rooms. It is suggested that the maximum standard (in terms of persons per room) might therefore be reached by a combination of building for a somewhat lower standard, with division of houses and sub-letting.

FRIEDMAN, M.: *Essays in Positive Economics.* (The University of Chicago Press, 1953). $5.75.
To be reviewed.

FULFORD, R.: *Glyn's: 1753-1953. Six Generations in Lombard Street.* (Macmillan & Co., London, 1953). 21/- stg.
To be reviewed.

GHOSH, M. K., and PRAKASH, O.: *Principles and Problems of Industrial Organization* (revised edition). (Allahabad, 1953). Rs. 11/-.
To be reviewed.

GROSS, H.: *Die Möglichkeiten des heutigen Südosthandels unter besonderer Berucksichtigung des Donauverkehrs.* (Deutschen Kanal-und Schiffahrtsvereins Rhein-Main-Donau e. V., Nürnberg, 1953).
To be reviewed.

HAMILTON, D.: *Newtonian Classicism and Darwinian Institutionalism: A Study of Change in Economic Theory.* (The University of New Mexico Press, 1953).
To be reviewed.

HANSEN, A. H., and CLEMENCE, R. V. (Ed.): *Readings in Business Cycles and National Income.* (George Allen & Unwin, London, 1953). 30/- stg.
To be reviewed.

HARROD, R.: *The Dollar.* Sir George Watson Lectures, 1953. (Macmillan, London, 1953). 9/6 stg.
To be reviewed.

HAYNES, W. W.: *Nationalization in Practice: The British Coal Industry.* (Bailey Bros. & Swinfen, London, 1953). 32/- stg.
To be reviewed.

HULTGREN, Thor: *Transport and the State of Trade in Britain.* (National Bureau of Economic Research, New York, 1954). $1.50.
To be reviewed.

INTERNATIONAL ASSOCIATION FOR RESEARCH IN INCOME AND WEALTH (Milton Gilbert, Ed.): *Income and Wealth, Series III.* (Bowes & Bowes, Cambridge, 1953). 35/- stg.
To be reviewed.

INSTITUT FUR WELTWIRTSCHAFT (University of Kiel): *Die Weltwirtschaft*, 1953. Heft 2. (Kiel, 1953). DM.10.
To be reviewed.

INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT: *Eighth Annual Report, 1952-1953.* (Washington, D.C.)
The report describes the Bank's continued expansion, in members and activities, during 1952-53. The entry of Germany, Japan and Jordan swelled membership to 54, and there was an increasing flow of loans and economic and technical advice to member nations. In an interesting general chapter, "Investment Programming in Underdeveloped Countries", the point is stressed that natural resources, capital equipment, and technical skills will not alone ensure development: cultural values, social structures and political and administrative institutions are powerful determinants of economic growth. There is an especial need, it is agreed, to establish top level units, as has been done in Brazil, Burma, Ceylon, India, Iraq, Nicaragua and Surinam, to measure, co-ordinate and encourage the progress of individual projects, both government and private.

INTERNATIONAL LABOUR ORGANIZATION: *Workers' Housing Problems in Asian Countries.* Asian Regional Conference, 1953. Report II. (I.L.O., Geneva, 1953).
To be reviewed.

INTERNATIONAL MONETARY FUND: *The Revival of Monetary Policy.* (Washington, 1953).
A short, popular account for selected countries of what the Fund regards as the hopeful revival in recent years of monetary policy as an instrument for dealing with disequilibrium in balance of payments.

INTERNATIONAL POLITICAL EDITIONS: *The Truth About Trieste.* (Societa Grafica Romana, Rome).
A statement, in temperate language, of the Italian claim to the territory of Trieste.

JOHNSTON, B. F. (with Hosada, M., and Kusumi, Y.): *Japanese Food Management in World War II.* (Stanford University Press, 1953). $7.50.
To be reviewed.

KALECKI, M.: *Theory of Economic Dynamics.* (Allen & Unwin, London, 1954). 18/- stg.
To be reviewed.

LITTLE, I. M. D.: *The Price of Fuel.* (Oxford Clarendon Press, 1953). 20/9 stg.
To be reviewed.

MADDEN, Frederick: *Imperial Constitutional Documents, 1765-1952.* (Blackwell, Oxford, 1953). 8/6 stg.
A collection intended to supplement the documents in A. B. Keith's well-known selections. It is indispensable to students of the constitutional history of the Commonwealth.

VON MANGOLDT, H. K.: *Die Europäische Zahlungsunion und ihre Aufgaben bei der Neuordnung des internationalen Zahlungsverkehrs.* (Kieler Vorträge, No. 3, Kiel, 1953).
To be reviewed.

MARTIN, J. W., and MYERS, W. S.: *Aspects of the Louisville Area Economy.* (Frankfort, Kentucky, 1953).
A study of incomes, commuting habits and retail trade in the area around Louisville. The authors project trends to 1960, with the intention of aiding government and business authorities to plan ahead.

MATTHEWS, R. C. O.: *A Study in Trade-Cycle History : Economic Fluctuations in Great Britain 1833-42.* (Cambridge University Press, 1954). 25/- stg.
To be reviewed.

NOURSE, E. G.: *Economics in the Public Service.* (George Allen & Unwin, 1953). 45/- stg.
To be reviewed.

PALVIA, C. M.: *The Econometric Model for Development Planning.* (Institute of Social Studies, Hague, 1953).
This slim volume presents the results of the application of an econometric model to the Indian economy. The work was undertaken under the general guidance of Professor J. Tinbergen, and presents some useful results for workers in this field. The model uses two technical equations and three behaviour equations. The technical equations comprise production functions for agriculture and industry, while the behaviour equations cover the demand for labour in each of these sectors, together with an overall demand function for all consumer products.

PATTERSON, G., GUNN, J. M. (and others): *Survey of United States International Finance 1952.* (Princeton University Press, 1953). 29/- Aust.
To be reviewed.

PIGOU, A. C.: *Alfred Marshall and Current Thought.* (Macmillan & Co., London, 1953). 7/6 stg.
To be reviewed.

REICHE, E.: *Aussenhandelsverflechtung und Industrialisierung Argentiniens.* (Kieler Studien, No. 25, Kiel, 1953).
To be reviewed.

SPENCER, Leland, and JOHNSON, Stewart: *Milk Distribution and Pricing in Great Britain.* (Cornell University Agricultural Experiment Station, Ithaca, New York, 1953).
To be reviewed.

STONE, Julius: *Legal Controls of International Conflict.* (Maitland Publications, Sydney, 1954). £5/5/- Aust.
To be reviewed.

UNITED NATIONS: *Economic Survey of Europe in 1953.* (Geneva, 1954). $2.50, 17/6 stg., 10 fr. (Swiss).
To be reviewed.

UNITED NATIONS: *Yearbook of International Trade Statistics 1952.* (New York, 1954). $4.00, 30/- stg., 16.00 fr. (Swiss).
To be reviewed.

UNITED STATES, Department of Agriculture: *Agricultural Statistics 1952.* (U.S. Government Printing Office, Washington, 1952). $2.00.
In addition to the usual comprehensive series of statistics covering agriculture and closely related subjects, this edition has several other useful sections. The historical series has been expanded to give tables for principal crops and livestock from 1866 and 1867 respectively, and for other items "an effort has been made to include a sufficient number of years to meet the needs of most users." Much of this historical material will not be included again for some years. A new chapter has been included on expenditures and family living of farm people. Information from the 1950 Census of Agriculture has been used to revise some previously published estimates.

UNIVERSITY OF MARYLAND, Bureau of Business and Economic Research: *Scientific Method in Business—Some Observations.* (University of Maryland, 1953).
A short anecdotal plea for the proper use of scientific and particularly statistical methods in business research.

UNIVERSITA DI PALERMO: *Annali della Facoltà di Economia e Comercio.* Anno VI, 1952, Fasc. I e II. Numero in memoria del Prof. Paolo Ricca Salerno. (Palermo, 1952). L.600 per copy.
To be reviewed.

UTTING, J. E. G.: *Social Accounts of Local Authorities.* The National Institute of Economic and Social Research, Occasional Papers, XVI. (Cambridge University Press, 1953). 16/- stg.
To be reviewed.

Various authors: *Econométrie.* Vol. XL of the series Colloques Internationaux du Centre National de la Recherche Scientifique. (Paris, 1953).
To be reviewed.

WANDER, Hilde: *Berufsausbildung und Produktivität Westdeutsche Nachwuchsprobleme* . . . . (Kieler Studien, No. 26. Kiel, 1953).
To be reviewed.

WITTKOWSKI, A.: *Schrifttum zum Marshallplan und zur Wirtschaftlichen Integration Europas.* (Bundesministeriums für den Marshallplan, Bad Godesberg, 1953).
To be reviewed.

WOYTINSKY, W. S., and WOYTINSKY, E. S.: *World Population and Production.* (The Twentieth Century Fund, New York, 1953). $12.00.
To be reviewed.

ECONOMICA

(NEW SERIES)

This journal is published quarterly by the London School of Economics and Political Science, in February, May, August and November. It contains articles on all branches of pure and applied economics, economic history and statistics, and reviews of the most important contributions to recent economic literature.

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